



















Three new species of *Neopestalotiopsis* and *Pseudopestalotiopsis* (Sporocadaceae, Amphisphaeriales) associated with shrub leaf diseases from Fujian, China

Zhi-Ang Heng¹, Tai-Chang Mu¹, Nemat O. Keyhani², Li-Xia Yang¹, Ming-Hai Zheng¹, Hua-Jun Lv¹, Zhi-Ying Zhao¹, Yu-Chen Mao¹, Jun-Ya Shang¹, Jiao Yang¹, Hui-Li Pu¹, Yong-Sheng Lin¹, Meng-Jia Zhu¹, Yu-Xiao Dang¹, Dong-Mei Wu³, Zhen-Xing Qiu⁴, Jun-Zhi Qiu¹, Xia-Yu Guan⁵

¹ State Key Laboratory of Agricultural and Forestry Biosecurity, College of Life Sciences, Fujian Agriculture and Forestry University, Fuzhou 350002, China

² Department of Biological Sciences, University of Illinois, Chicago 60607, USA

³ Biotechnology Research Institute, Xinjiang Academy of Agricultural and Reclamation Sciences, Shihezi 832061, China

⁴ College of Literature and Law, Fuzhou Technology and Business University, Fuzhou 350715, China

⁵ Key Laboratory of Ministry of Education for Genetics, Breeding and Multiple Utilization of Crops, College of Horticulture, Fujian Agriculture and Forestry University, Fuzhou 350002, China

Corresponding authors: Jun-Zhi Qiu (junzhiqu@126.com); Xia-Yu Guan (gxy302@126.com)



Academic editor: Ning Jiang

Received: 4 February 2025

Accepted: 21 April 2025

Published: 24 June 2025

Citation: Heng Z-A, Mu T-C, Keyhani NO, Yang L-X, Zheng M-H, Lv H-J, Zhao Z-Y, Mao Y-C, Shang J-Y, Yang J, Pu H-L, Lin Y-S, Zhu M-J, Dang Y-X, Wu D-M, Qiu Z-X, Qiu J-Z, Guan X-Y (2025) Three new species of *Neopestalotiopsis* and *Pseudopestalotiopsis* (Sporocadaceae, Amphisphaeriales) associated with shrub leaf diseases from Fujian, China. MycoKeys 119: 1–28. <https://doi.org/10.3897/mycokeys.119.148647>

Copyright: © Zhi-Ang Heng et al.

This is an open access article distributed under terms of the Creative Commons Attribution License (Attribution 4.0 International – CC BY 4.0).

Abstract

Neopestalotiopsis and *Pseudopestalotiopsis* are classified as pestalotioid fungi, include a diverse range of plant pathogenic, endophytic and saprobic species and are widely distributed in tropical and temperate climates. These fungi are associated with a wide variety of plants worldwide and are exemplified by multi-septate conidia with appendages at both ends. Phytopathogenic members cause various plant diseases, for example, leaf spot, fruit rot, canker, blight and various infections affecting palm, mango, blueberry, tea and other important crops. In this study, six isolates were collected from diseased leaves of *Litsea verticillata*, *Ixora chinensis* and an unidentified shrub in Fujian Province, China. Based on morphological characteristics and molecular phylogenetic analyses of combined nucleotide sequences of internal transcribed spacer regions of rDNA (ITS), the partial translation elongation factor 1-alpha gene (*tef1*) and partial beta-tubulin gene (*tub2*), three new species *Neopestalotiopsis litseae* **sp. nov.**, *Neo. longqishanensis* **sp. nov.** and *Pseudopestalotiopsis zhangzhouensis* **sp. nov.** are described and illustrated herein.

Key words: Morphology, multigene phylogeny, new taxa, pestalotioid fungi

Introduction

Pestalotioid fungi represent a diverse group of Ascomycota, common in tropical and temperate regions, that often associate with plants as pathogens, endophytes and/or saprophytes (Guba 1961; Barr 1975; Nag Raj 1993; Maharachchikumbura et al. 2014a). Pathogenic pestalotioid fungi that cause plant diseases result in symptoms that can include cankers, leaf spots, shoot and stem die-back and fruit rots. In rare cases, these fungi have also been implicated in human diseases, for example, onychomycosis (Borgohain et al. 2020). Species identification of pestalotioid fungi remains a major challenge due to taxonomic

confusion and homonyms as a result of significant morphological overlap between species (Jeewon et al. 2002, 2003; Maharachchikumbura et al. 2011, 2012, 2014b). The genus *Pestalotia* was originally characterised by fusiform conidia with six-celled structures and appendages at both apical and basal ends (De Notaris 1839). A century later, Steyaert (1955) reclassified the genus into three distinct genera – *Pestalotia*, *Pestalotiopsis*, and *Truncatella* – based on conidial cell counts. This taxonomic framework remains widely adopted (Maharachchikumbura et al. 2011), though debates regarding generic boundaries within pestalotioid fungi have occurred (Maharachchikumbura et al. 2014b). Prior to the 1990s, the taxonomy of pestalotioid fungi relied on stable conidial traits, particularly the pigmentation of the three median cells – versicolorous in *Neopestalotiopsis* and concolorous in other genera (Maharachchikumbura et al. 2011, 2012). However, the use of conidial morphology for species identification can be contentious due to high variability in colony features (colour, texture, shape) and conidial characteristics under differing culture conditions (Egger 1995; Hu et al. 2007). In particular, significant overlap of conidial features makes it difficult to identify pestalotioid fungal species solely based on morphology. Recent taxonomic revisions, incorporating 18S rRNA gene sequencing and multi-loci analyses (Maharachchikumbura et al. 2014b), have helped to resolve three distinct lineages and has led to the establishment of two new genera, *Neopestalotiopsis* and *Pseudopestalotiopsis* (Maharachchikumbura et al. 2014b; Tsai et al. 2018). Thus, the combination of morphological characterisation and molecular sequence data (e.g. multigene phylogenies) have become the standard for accurate identification within the pestalotioid group and for delineating members within these three genera (Norphanphoun et al. 2019).

Specifically, *Neopestalotiopsis* and *Pseudopestalotiopsis* were separated from *Pestalotiopsis* due to differences in their conidia and ITS length (and sequence). Morphologically, *Neopestalotiopsis* is distinguished from *Pestalotiopsis* and *Pseudopestalotiopsis* by the versicolourous intermediate cells (Maharachchikumbura et al. 2014b) and *Pseudopestalotiopsis* differs from *Pestalotiopsis* by having darker three intermediate cells and knobbed apical appendage (Maharachchikumbura et al. 2014b). In recent years, several new species, for example, *Pestalotiopsis camelliae*, *Pseudopestalotiopsis ignota* and *Ps. theae*, have been introduced into the group (Maharachchikumbura et al. 2016; Liu et al. 2017; Nozawa et al. 2017; Tibpromma et al. 2018; Tsai et al. 2018; Watanabe et al. 2018).

Litsea verticillata (Lauraceae) is an evergreen shrub or small tree and is often harvested from the wild for local use as a medicine and/or source of fuel (Yan et al. 2024) and *Ixora chinensis* (Rubiaceae) is a salt-tolerant shrub that primarily is found in wet tropical regions, producing pink and white blossoms attractive to butterflies and hummingbirds. Here, we report on the taxonomic assignment and identification of fungi found on diseased leaves of these plants, based on a combination of morphological and molecular phylogenetic analyses, the latter of which included analysis of multi-locus nucleotide sequencing data, examining the internal transcribed spacer region of rDNA (ITS), the translation elongation factor 1-alpha gene (*tef1*) and the beta-tubulin gene (*tub2*) genetic loci. In total, we have identified two new species of *Neopestalotiopsis*, one isolated from *Litsea verticillata* and the other from an unknown plant and one new species of *Pseudopestalotiopsis* isolated from *Ixora chinensis*, all found in Fujian Province, China.

Materials and methods

Sample collection, isolation and morphological observations

Diseased leaves derived from *L. verticillata*, *I. chinensis* and an unknown shrub were collected from Sanming and Zhangzhou City of Fujian Province, China, in September 2023. The leaf samples were processed as described previously (Fu et al. 2019). Tissue fragments (~ 25 mm²) were taken from the margin of leaves at sites of apparent infection by fungi. Samples were surface disinfected by immersion in 75% ethanol solution for 60 s, placed in sterile deionised water for 45 s, transferred to 5% sodium hypochlorite solution for 30 s and then rinsed three times in sterile deionised water for 60 s. The leaf fragments were then dried with sterilised filter paper and transferred on to potato dextrose agar (PDA) media plates (deionised water 1,000 ml, potato 200 g, agar 20 g, dextrose 20 g, pH ~7.0, available after sterilisation) and incubated at 25 °C for 5–7 d. Single colonies of the isolated fungi were purified by repeated streaking on PDA grown as above. Samples of the dried specimens were deposited in the Herbarium Mycologicum Academiae Sinicae, Institute of Microbiology, Chinese Academy of Sciences, Beijing, China (HMAS). Living cultures were conserved in the China General Microbiological Culture Collection Center (CGMCC). Images of colony morphologies were captured using a digital camera (Canon EOS 6D Mark II, Tokyo, Japan) at 7 and 14 d after inoculation on indicated media plates (Cai et al. 2009). Fungal micromorphological features were observed and photographed using a stereomicroscope (Nikon SMZ745, Tokyo, Japan) and a biomicroscope (Ni-U, Tokyo, Japan) coupled to digital cameras (Olympus, Tokyo, Japan). Image analyses were performed using the Digimizer 5.4.4 software (<https://www.digimizer.com>). All fungal strains were stored in 10% sterilised glycerine and sterile water at 4 °C in 2.0 ml tubes. Taxonomic information of the new taxa was registered in MycoBank (<http://www.mycobank.org>, accessed on 15 November 2024).

DNA extraction, PCR amplification and sequencing

Fungal genomic DNA was extracted from growing mycelium using the Fungal DNA Mini Kit (OMEGA-D3390, Feiyang Biological Engineering Co., Ltd., Guangzhou, China) according to the manufacturer's instructions. Indicated genetic loci were amplified and isolated by polymerase chain reaction (PCR). Target genetic loci included regions of rDNA (ITS), beta-tubulin (*tub2*) and translation elongation factor-alpha (*tef1*) genes. The PCR thermal cycling program and primer pairs are given in Table 1. PCR reaction volumes were 25 µl containing: 12.5 µl of 2 × Rapid Taq Master Mix (Vazyme Nanjing, China), 1 µl (10 µM) each of forward and reverse primers (Sangon, Shanghai, China), 1 µl of template genomic DNA and 9.5 µl of double-distilled water (ddH₂O) using Bio-Rad Thermocycler (Hercules, CA, USA) for amplification. The integrity and size of all PCR products were checked on 1% agarose gel electrophoresis and the products were sequenced by a commercial company (Tsingke Co., Ltd, Fuzhou, China). The forward and reverse sequences of PCR products for each locus were processed by MEGA 7.0.20 software (Kumar et al. 2016). The new sequences generated in this study have been deposited in GenBank (<https://www.ncbi.nlm.nih.gov>, Table 2).

Table 1. Target loci, primers and PCR thermal cycle programmes.

| Locus | Primers | Sequence (5'-3') | PCR Cycles |
|-------|-----------------|--|--|
| ITS | ITS5 ITS4 | GGAAGTAAAAGTCGTAACAAGG TCCTCCGCTTATTGATATGC | 94 °C: 3 min, (94 °C: 15 s, 54 °C: 15 s, 72 °C: 30 s) × 35 cycles, 72 °C: 5 min |
| tub2 | T1 Bt2b | AACATGCGTGAGATTGTAAGT ACCCTCAGTGTAGTGACCCTTGGGC | 95 °C: 3 min, (94 °C: 30 s, 55 °C: 50 s, 72 °C: 1 min) × 35 cycles, 72 °C: 7 min |
| tef1 | EF1-728F EF2 | CATCGAGAAGTTCGAGAAGG GGARGTACCAGTSATCATGTT | 94 °C: 5 min, (94 °C: 30 s, 52 °C: 30 s, 72 °C: 30 s) × 35 cycles, 72 °C: 7 min |

Table 2. Species names, strain number, substrate or host, locations and corresponding GenBank accession numbers of DNA sequences used in the molecular phylogenetic analyses of *Neopestalotiopsis*.

| Species | Specimen voucher / Strain | Host/Substrate | Locations | GenBank Accession Number | | | References |
|-------------------------------------|--------------------------------------|-----------------------------|-------------|--------------------------|----------|----------|-----------------------------------|
| | | | | ITS | tub2 | tef1 | |
| <i>Neopestalotiopsis acrostichi</i> | MFLUCC 17-1754 ^T | <i>Acrostichum aureum</i> | Thailand | MK764272 | MK764338 | MK764316 | Norphanphounet et al. (2019) |
| <i>Neo. acrostichi</i> | MFLUCC 17-1755 | <i>Acrostichum aureum</i> | Thailand | MK764273 | MK764339 | MK764317 | Norphanphounet et al. (2019) |
| <i>Neo. ageratinae</i> | CGMCC 3.23468 = LC11319 ^T | <i>Ageratina adenophora</i> | China | OR247899 | OR381006 | OR361406 | Razaghi et al. (2024) |
| <i>Neo. ageratinae</i> | LC15845 | <i>Ageratina adenophora</i> | China | OR247896 | OR381007 | OR361407 | Razaghi et al. (2024) |
| <i>Neo. alpapicalis</i> | MFLUCC 17-2544 ^T | <i>Rhizophora mucronata</i> | Thailand | MK357772 | MK463545 | MK463547 | Kumar et al. (2019) |
| <i>Neo. alpapicalis</i> | MFLUCC 17-2545 | <i>Rhizophora mucronata</i> | Thailand | MK357773 | MK463546 | MK463548 | Kumar et al. (2019) |
| <i>Neo. amomi</i> | HKAS 124563 ^T | <i>Amomum villosum</i> | China | OP498012 | OP752133 | OP653489 | Sun et al. (2023) |
| <i>Neo. amomi</i> | HKAS 124564 | <i>Amomum villosum</i> | China | OP498013 | OP765913 | OP753382 | Sun et al. (2023) |
| <i>Neo. aotearoa</i> | CBS 367.54 ^T | Canvas | New Zealand | KM199369 | KM199454 | KM199526 | Maharachchikumbura et al. (2014b) |
| <i>Neo. asiatica</i> | MFLUCC 12-0286 ^T | Unidentified tree | China | JX398983 | JX399018 | JX399049 | Maharachchikumbura et al. (2012) |
| <i>Neo. australis</i> | CBS 114159 ^T | <i>Telopea</i> sp. | Australia | KM199348 | KM199432 | KM199537 | Maharachchikumbura et al. (2014b) |
| <i>Neo. brachiata</i> | MFLUCC 17-1555 ^T | <i>Rhizophora apiculata</i> | Thailand | MK764274 | MK764340 | MK764318 | Norphanphoun et al. (2019) |
| <i>Neo. brasiliensis</i> | COAD 2166 ^T | <i>Psidium guajava</i> | Brazil | MG686469 | MG692400 | MG692402 | Bezerra et al. (2018) |
| <i>Neo. camelliae-oleiferae</i> | CSUFTCC81 ^T | <i>Camellia oleifera</i> | China | OK493585 | OK562360 | OK507955 | Li et al. (2021) |
| <i>Neo. camelliae-oleiferae</i> | CSUFTCC82 | <i>Camellia oleifera</i> | China | OK493586 | OK562361 | OK507956 | Li et al. (2021) |
| <i>Neo. castanopsidis</i> | CGMCC 3.23478 = LC13333 ^T | <i>Castanopsis boisii</i> | China | OR247897 | OR381018 | OR361418 | Razaghi et al. (2024) |
| <i>Neo. castanopsidis</i> | LC15849 | <i>Castanopsis boisii</i> | China | OR247895 | OR381019 | OR361419 | Razaghi et al. (2024) |
| <i>Neo. cavernicola</i> | KUMCC 20-0269 ^T | Cave | China | MW545802 | MW557596 | MW550735 | Liu et al. (2021) |
| <i>Neo. cavernicola</i> | KUMCC 20-0332 | Cave | China | MW581238 | MW590328 | MW590327 | Liu et al. (2021) |
| <i>Neo. celtidis</i> | CGMCC 3.23513 = LC8947 ^T | <i>Celtis sinensis</i> | China | OR247900 | OR381049 | OR361449 | Razaghi et al. (2024) |
| <i>Neo. celtidis</i> | LC15870 | <i>Celtis sinensis</i> | China | OR247894 | OR381050 | OR361450 | Razaghi et al. (2024) |
| <i>Neo. Chiangmaiensis</i> | MFLUCC 18-0113 ^T | <i>Pandanus</i> sp. | Thailand | – | MH412725 | MH388404 | Tibpromma et al. (2018) |
| <i>Neo. chrysea</i> | MFLUCC 12-0261 ^T | Dead leaves | China | JX398985 | JX399020 | JX399051 | Maharachchikumbura et al. (2012) |
| <i>Neo. chrysea</i> | MFLUCC 12-0262 | Dead plant | China | JX398986 | JX399021 | JX399052 | Maharachchikumbura et al. (2012) |
| <i>Neo. clavispora</i> | MFLUCC 12-0281 ^T | <i>Magnolia</i> sp. | China | JX398979 | JX399014 | JX399045 | Maharachchikumbura et al. (2012) |
| <i>Neo. clavispora</i> | MFLUCC 12-0280 | <i>Magnolia</i> sp. | China | JX398978 | JX399013 | JX399044 | Maharachchikumbura et al. (2012) |
| <i>Neo. clavispora</i> | CBS 447.73 | Decaying wood | Sri Lanka | KM199374 | KM199443 | KM199539 | Maharachchikumbura et al. (2014b) |
| <i>Neo. cocoës</i> | MFLUCC 15-0152 ^T | <i>Cocos nucifera</i> | Thailand | KX789687 | – | KX789689 | Hyde et al. (2016) |
| <i>Neo. coffeae-arabicae</i> | HGUP4019 ^T | <i>Coffea arabica</i> | China | KF412649 | KF412643 | KF412646 | Song et al. (2013) |
| <i>Neo. coffeae-arabicae</i> | HGUP4015 | <i>Coffea arabica</i> | China | KF412647 | KF412641 | KF412644 | Song et al. (2013) |
| <i>Neo. collariata</i> | CGMCC 3.23493 = LC4212 ^T | <i>Rhododendron</i> sp. | China | OR247905 | OR381026 | OR361426 | Razaghi et al. (2024) |
| <i>Neo. collariata</i> | LC4276 | <i>Rhododendron</i> sp. | China | OR247904 | OR381028 | OR361428 | Razaghi et al. (2024) |
| <i>Neo. collariata</i> | LC4205 | <i>Rhododendron</i> sp. | China | OR247906 | OR381022 | OR361422 | Razaghi et al. (2024) |
| <i>Neo. collariata</i> | LC8308 | <i>Diospyros kaki</i> | China | OR247902 | OR381044 | OR361444 | Razaghi et al. (2024) |

| Species | Specimen voucher / Strain | Host/Substrate | Locations | GenBank Accession Number | | | References |
|---------------------------------|--|--|-----------|--------------------------|----------|----------|-----------------------------------|
| | | | | ITS | tub2 | tef1 | |
| <i>Neo. concentrica</i> | CFCC 55162 ^T | <i>Rosa rugosa</i> | China | OK560707 | OM117698 | OM622433 | Peng et al. (2022) |
| <i>Neo. concentrica</i> | CFCC 55163 | <i>Rosa chinensis</i> | China | OK560708 | OM117699 | OM622434 | Peng et al. (2022) |
| <i>Neo. cubana</i> | CBS 600.96 ^T | Leaf litter | China | KM199347 | KM199438 | KM199521 | Maharachchikumbura et al. (2014b) |
| <i>Neo. dendrobii</i> | MFLUCC 14-0106 ^T | <i>Dendrobium cariniferum</i> | Thailand | MK993571 | MK975835 | MK975829 | Ma et al. (2019) |
| <i>Neo. dendrobii</i> | MFLUCC 14-0132 | <i>Dendrobium</i> sp. | Thailand | MK993572 | – | MK975830 | Ma et al. (2019) |
| <i>Neo. dendrobii</i> | MFLUCC 14-0099 | <i>Dendrobium cariniferum</i> | Thailand | MK993570 | MK975834 | MK975828 | Ma et al. (2019) |
| <i>Neo. dimorphospora</i> | CGMCC 3.23497 = LC4444 ^T | <i>Eurya chinensis</i> | China | OR247903 | OR381030 | OR361430 | Razaghi et al. (2024) |
| <i>Neo. dimorphospora</i> | LC8359 | <i>Patrinia villosa</i> | China | OR247901 | OR381045 | OR361445 | Razaghi et al. (2024) |
| <i>Neo. dolichoconidiophora</i> | CGMCC 3.23490 = LC3634 ^T | <i>Cycas revoluta</i> | China | OR247911 | OR381021 | OR361421 | Razaghi et al. (2024) |
| <i>Neo. dolichoconidiophora</i> | LC12283 | <i>Aucuba japonica</i> var. <i>variegata</i> | China | OR247898 | OR381008 | OR361408 | Razaghi et al. (2024) |
| <i>Neo. drenthii</i> | BRIP 72264a ^T | <i>Macadamia integrifolia</i> | Australia | MZ303787 | MZ312680 | MZ344172 | Prasannath et al. (2021) |
| <i>Neo. drenthii</i> | BRIP 72263a | <i>Macadamia integrifolia</i> | Australia | MZ303786 | MZ312679 | MZ344171 | Prasannath et al. (2021) |
| <i>Neo. egyptiaca</i> | CBS 140162 ^T | <i>Mangifera indica</i> | Egypt | KP943747 | KP943746 | KP943748 | Crous et al. (2015) |
| <i>Neo. egyptiaca</i> | COAD 2167 | <i>Psidium guajava</i> | Brazil | MG686470 | MG692401 | MG692403 | Bezerra et al. (2018) |
| <i>Neo. elaeagni</i> | HGUP10002 ^T | <i>Elaeagnus pungens</i> | China | MW930716 | MZ683391 | MZ203452 | He et al. (2022) |
| <i>Neo. elaeagni</i> | HGUP10006 | <i>Elaeagnus pungens</i> | China | ON597079 | ON595537 | ON595535 | He et al. (2022) |
| <i>Neo. elaeidis</i> | MFLUCC 15-0735 ^T | <i>Elaeis guineensis</i> | Thailand | ON650690 | – | ON734012 | Konta et al. (2023) |
| <i>Neo. elaeidis</i> | MFLUCC 15-0801 | <i>Elaeis guineensis</i> | Thailand | ON650689 | – | ON734011 | Konta et al. (2023) |
| <i>Neo. ellipsospora</i> | MFLUCC 12-0283 ^T | Dead plant materials | China | JX398980 | JX399016 | JX399047 | Maharachchikumbura et al. (2012) |
| <i>Neo. ellipsospora</i> | MFLUCC 12-0284 | Dead plant materials | China | JX398981 | JX399015 | JX399046 | Maharachchikumbura et al. (2012) |
| <i>Neo. ellipsospora</i> | CBS 115113 | <i>Ardisia crenata</i> | China | KM199343 | KM199450 | KM199544 | Maharachchikumbura et al. (2014b) |
| <i>Neo. eucalypti</i> | PA3 | <i>Eucalyptus</i> sp. | Brazil | – | MK286942 | MK253106 | Santos et al. (2020) |
| <i>Neo. eucalypti</i> | PA4 | <i>Eucalyptus</i> sp. | Brazil | – | MK286943 | MK253107 | Santos et al. (2020) |
| <i>Neo. eucalypticola</i> | CBS 264.37 ^T | <i>Eucalyptus globulus</i> | Unknown | KM199376 | KM199431 | KM199551 | Maharachchikumbura et al. (2014b) |
| <i>Neo. eucalyptorum</i> | MEAN 1308 = CBS 147684 ^T | <i>Eucalyptus globulus</i> | Portugal | MW794108 | MW802841 | MW805397 | Diogo et al. (2021) |
| <i>Neo. eucalyptorum</i> | MEAN 1323 | <i>Eucalyptus globulus</i> | Portugal | MW794099 | MW802832 | MW805412 | Diogo et al. (2021) |
| <i>Neo. eucalyptorum</i> | MEAN 1324 | <i>Eucalyptus globulus</i> | Portugal | MW794100 | MW802833 | MW805413 | Diogo et al. (2021) |
| <i>Neo. fijiensis</i> | CGMCC 3.23465 = LC0652 = ICMP6030 Q ^T | <i>Arachis hypogaea</i> | Fiji | OR247892 | OR381003 | OR361403 | Razaghi et al. (2024) |
| <i>Neo. fijiensis</i> | LC15864 | <i>Arachis hypogaea</i> | Fiji | OR247864 | OR381004 | OR361404 | Razaghi et al. (2024) |
| <i>Neo. fimbriata</i> | CGMCC 3.23479 = LC13340 ^T | <i>Cinnamomum camphora</i> | China | OR247869 | OR381020 | OR361420 | Razaghi et al. (2024) |
| <i>Neo. fimbriata</i> | LC0141 | Unknown | China | OR247893 | OR381002 | OR361402 | Razaghi et al. (2024) |
| <i>Neo. fimbriata</i> | LC6309 | Unknown | China | OR247882 | OR381037 | OR361437 | Razaghi et al. (2024) |
| <i>Neo. fimbriata</i> | LC6285 | <i>Camellia sinensis</i> | China | KX895013 | KX895346 | KX895232 | Liu et al. (2017) |
| <i>Neo. foedans</i> | CGMCC 3.9123 ^T | Mangrove plant leaves | China | JX398987 | JX399022 | JX399053 | Maharachchikumbura et al. (2012) |
| <i>Neo. foedans</i> | CGMCC 3.9178 | <i>Neodopsis decaryi</i> | China | JX398989 | JX399024 | JX399055 | Maharachchikumbura et al. (2012) |
| <i>Neo. formicarum</i> | CBS 362.72 ^T | Dead Formicidae (ant) | Ghana | KM199358 | KM199455 | KM199517 | Maharachchikumbura et al. (2014b) |
| <i>Neo. formicarum</i> | CBS 115.83 | Plant debris | Cuba | KM199344 | KM199444 | KM199519 | Maharachchikumbura et al. (2014b) |
| <i>Neo. fragariae</i> | ZHKUCC 22- 0113 ^T | <i>Fragaria</i> × <i>ananassa</i> | China | ON553410 | ON569075 | ON569076 | Prematunga et al. (2022) |
| <i>Neo. fragariae</i> | ZHKUCC 22- 0114 | <i>Fragaria</i> × <i>ananassa</i> | China | ON651145 | ON685198 | ON685196 | Prematunga et al. (2022) |
| <i>Neo. fuzhouensis</i> | CGMCC 3.23509 = LC8457 ^T | <i>Acer buergerianum</i> | China | OR247877 | OR381047 | OR361447 | Razaghi et al. (2024) |
| <i>Neo. fuzhouensis</i> | LC15861 | <i>Acer buergerianum</i> | China | OR247865 | OR381048 | OR361448 | Razaghi et al. (2024) |
| <i>Neo. guajavae</i> | FMBCC 11.1 = FMB0026 | On branches of Guava tree | Pakistan | MF783085 | MH460871 | MH460868 | Haq et al. (2021) |
| <i>Neo. guajavae</i> | FMBCC 11.1 = FMB0027 | On branches of Guava tree | Pakistan | MF783084 | MH460872 | MH460869 | Haq et al. (2021) |

| Species | Specimen voucher / Strain | Host/Substrate | Locations | GenBank Accession Number | | | References |
|------------------------------------|-------------------------------------|-----------------------------------|--------------|--------------------------|-----------------|-----------------|-----------------------------------|
| | | | | ITS | tub2 | tef1 | |
| <i>Neo. guajavicola</i> | FMBCC 11.4 = FMB0129 ^T | On leaves of Guava tree | Pakistan | MH209245 | MH460873 | MH460870 | Haq et al. (2021) |
| <i>Neo. guangxiensis</i> | CGMCC 3.23505 = LC7542 ^T | Poaceae sp. | China | OR247881 | OR381040 | OR361440 | Razaghi et al. (2024) |
| <i>Neo. guangxiensis</i> | LC15866 | Poaceae sp. | China | OR247863 | OR381041 | OR361441 | Razaghi et al. (2024) |
| <i>Neo. guizhouensis</i> | CGMCC 3.23501 = LC5337 ^T | Air, unnamed karst cave | China | OR247883 | OR381036 | OR361436 | Razaghi et al. (2024) |
| <i>Neo. guizhouensis</i> | LC10106 | Cave rock | China | OR247876 | OR381005 | OR361405 | Razaghi et al. (2024) |
| <i>Neo. hadrolaeliae</i> | VIC 47180 ^T | <i>Hadrolaelia jongheana</i> | Brazil | MK454709 | MK465120 | MK465122 | Freitas et al. (2019) |
| <i>Neo. hadrolaeliae</i> | VIC 47181 | <i>Hadrolaelia jongheana</i> | Brazil | MK454710 | MK465121 | MK465123 | Freitas et al. (2019) |
| <i>Neo. haikouensis</i> | SAUCC 212271 ^T | <i>Ilex chinensis</i> | China | OK087294 | OK104870 | OK104877 | Zhang et al. (2021) |
| <i>Neo. haikouensis</i> | SAUCC 212272 | <i>Ilex chinensis</i> | China | OK087295 | OK104871 | OK104878 | Zhang et al. (2021) |
| <i>Neo. hispanica</i> | MEAN 1310 = CBS 147686 ^T | <i>Eucalyptus globulus</i> | Portugal | MW794107 | MW802840 | MW805399 | Diogo et al. (2021) |
| <i>Neo. hispanica</i> | MEAN 1311 | <i>Eucalyptus globulus</i> | Portugal | MW794106 | MW802839 | MW805400 | Diogo et al. (2021) |
| <i>Neo. hispanica</i> | CAA1059 = MUM 21.36 | <i>Vaccinium corymbosum</i> | Portugal | MW969747 | MW934610 | MW959099 | Santos et al. (2022) |
| <i>Neo. hispanica</i> | CAA1027 | <i>Vaccinium corymbosum</i> | Portugal | MW969746 | MW934609 | MW959098 | Santos et al. (2022) |
| <i>Neo. honoluluana</i> | CBS 114495 ^T | <i>Telopea</i> sp. | USA | KM199364 | KM199457 | KM199548 | Maharachchikumbura et al. (2014b) |
| <i>Neo. honoluluana</i> | CBS 111535 | <i>Telopea</i> sp. | USA | KM199363 | KM199461 | KM199546 | Maharachchikumbura et al. (2014b) |
| <i>Neo. hydeana</i> | MFLUCC 20-0132 ^T | <i>Artocarpus heterophyllus</i> | Thailand | MW266069 | MW251119 | MW251129 | Huanluek et al. (2021) |
| <i>Neo. hydeana</i> | MFLUCC 20-0133 | <i>Citrus</i> sp. | Thailand | MW266071 | MW251121 | MW251131 | Huanluek et al. (2021) |
| <i>Neo. hyperici</i> | KUNCC 22-12597 ^T | <i>Hypericum monogynum</i> | China | OP498010 | OP765908 | OP713768 | Sun et al. (2023) |
| <i>Neo. hyperici</i> | KUNCC 22-12598 | <i>Hypericum monogynum</i> | China | OP498009 | OP737883 | OP737880 | Sun et al. (2023) |
| <i>Neo. hyperici</i> | CGMCC 3.23504 = LC7093 | <i>Musa basjoo</i> | China | OR247907 | OR381038 | OR361438 | Razaghi et al. (2024) |
| <i>Neo. hyperici</i> | LC15859 | <i>Musa basjoo</i> | China | OR247908 | OR381039 | OR361439 | Razaghi et al. (2024) |
| <i>Neo. iberica</i> | MEAN 1313 = CBS 147688 ^T | <i>Eucalyptus globulus</i> | Portugal | MW794111 | MW802844 | MW805402 | Diogo et al. (2021) |
| <i>Neo. iberica</i> | MEAN 1314 = CBS 147689 | <i>Eucalyptus globulus</i> | Spain | MW794114 | MW802847 | MW805403 | Diogo et al. (2021) |
| <i>Neo. iranensis</i> | CBS 137768 ^T | <i>Fragaria ananassa</i> | Iran | OR230041 | OR381098 | OR380984 | Razaghi et al. (2024) |
| <i>Neo. javaensis</i> | CBS 257.31 | <i>Cocos nucifera</i> | Indonesia | KM199357 | KM199437 | KM199543 | Maharachchikumbura et al. (2014b) |
| <i>Neo. javaensis</i> | MFLUCC 12-0594 | <i>Vitis vinifera</i> | France | KX816905 | KX816933 | KX816874 | Maharachchikumbura et al. (2014b) |
| <i>Neo. jiangxiensis</i> | CGMCC 3.23492 = LC4209 ^T | <i>Rhododendron latoucheae</i> | China | OR247890 | OR381024 | OR361424 | Razaghi et al. (2024) |
| <i>Neo. jiangxiensis</i> | LC4210 | <i>Rhododendron latoucheae</i> | China | OR247889 | OR381025 | OR361425 | Razaghi et al. (2024) |
| <i>Neo. jiangxiensis</i> | LC4259 | <i>Rhododendron latoucheae</i> | China | OR783483 | OR792184 | OR792183 | Razaghi et al. (2024) |
| <i>Neo. keteleeriae</i> | MFLUCC 13-0915 ^T | <i>Keteleeria pubescens</i> | China | KJ023087 | KJ023088 | KJ023089 | Song et al. (2014) |
| <i>Neo. keteleeriae</i> | GUCC 21501 | <i>Rhapis excelsa</i> | China | MW931620 | MW980441 | MW980442 | Yang et al. (2021) |
| <i>Neo. liquidambaris</i> | CGMCC 3.23508 = LC8381 ^T | <i>Liquidambar formosana</i> | China | OR247878 | OR381046 | OR361446 | Razaghi et al. (2024) |
| <i>Neo. liquidambaris</i> | LC5236 | Unknown | China | OR247884 | OR381035 | OR361435 | Razaghi et al. (2024) |
| <i>Neo. litseae</i> | CGMCC 3.28543^T | <i>Litsea verticillata</i> | China | PQ681332 | PQ687596 | PQ687590 | This study |
| <i>Neo. litseae</i> | CGMCC 3.28544 | <i>Litsea verticillata</i> | China | PQ681337 | PQ687597 | PQ687591 | This study |
| <i>Neo. longiappendiculata</i> | MEAN 1315 = CBS 147690 ^T | <i>Eucalyptus globulus</i> | Portugal | MW794112 | MW802845 | MW805404 | Diogo et al. (2021) |
| <i>Neo. longiappendiculata</i> | MEAN 1316 = CBS 147691 | <i>Eucalyptus nitens</i> | Portugal | MW794103 | MW802836 | MW805405 | Diogo et al. (2021) |
| <i>Neo. longqishanensis</i> | CGMCC 3.28545^T | Unknown | China | PQ681338 | PQ687598 | PQ687592 | This study |
| <i>Neo. longqishanensis</i> | CGMCC 3.28546 | Unknown | China | PQ681339 | PQ687599 | PQ687593 | This study |
| <i>Neo. lusitanica</i> | MEAN 1317 = CBS 147692 ^T | <i>Eucalyptus globulus</i> | Portugal | MW794110 | MW802843 | MW805406 | Diogo et al. (2021) |
| <i>Neo. lusitanica</i> | MEAN 1318 = CBS147693 ^T | <i>Eucalyptus globulus</i> | Portugal | MW794093 | MW802826 | MW805407 | Diogo et al. (2021) |

| Species | Specimen voucher / Strain | Host/Substrate | Locations | GenBank Accession Number | | | References |
|----------------------------------|---------------------------------------|-------------------------------|--------------|--------------------------|----------|----------|-----------------------------------|
| | | | | ITS | tub2 | tef1 | |
| <i>Neo. macadamiae</i> | BRIP 63737c = CBS 142767 ^T | <i>Macadamia integrifolia</i> | Australia | KX186604 | KX186654 | KX186627 | Akinsanmi et al. (2017) |
| <i>Neo. macadamiae</i> | BRIP 63742a | <i>Macadamia integrifolia</i> | Australia | KX186599 | KX186657 | KX186629 | Akinsanmi et al. (2017) |
| <i>Neo. machili</i> | CGMCC 3.23477 = LC13302 ^T | <i>Machilus yunnanensis</i> | China | OR247870 | OR381016 | OR361416 | Razaghi et al. (2024) |
| <i>Neo. machili</i> | LC15848 | <i>Machilus yunnanensis</i> | China | OR247868 | OR381017 | OR361417 | Razaghi et al. (2024) |
| <i>Neo. maddoxii</i> | BRIP 72266a ^T | <i>Macadamia integrifolia</i> | Australia | MZ303782 | MZ312675 | MZ344167 | Prasannath et al. (2021) |
| <i>Neo. maddoxii</i> | BRIP 72260a | <i>Macadamia integrifolia</i> | Australia | MZ303780 | MZ312673 | MZ344165 | Prasannath et al. (2021) |
| <i>Neo. maddoxii</i> | BRIP 72262a | <i>Macadamia integrifolia</i> | Australia | MZ303781 | MZ312674 | MZ344166 | Prasannath et al. (2021) |
| <i>Neo. magna</i> | MFLUCC 12-0652 ^T | <i>Pteridium</i> sp. | France | KF582795 | KF582793 | KF582791 | Maharachchikumbura et al. (2014a) |
| <i>Neo. megabetaspora</i> | CGMCC 3.23474 = LC13119 ^T | Poaceae sp. | China | OR247875 | OR381010 | OR361410 | Razaghi et al. (2024) |
| <i>Neo. megabetaspora</i> | LC13142 | <i>Brachiaria</i> sp. | China | OR247873 | OR381012 | OR361412 | Razaghi et al. (2024) |
| <i>Neo. megabetaspora</i> | LC13133 | Poaceae sp. | China | OR247874 | OR381011 | OR361411 | Razaghi et al. (2024) |
| <i>Neo. mesopotamica</i> | CBS 336.86 ^T | <i>Pinus brutia</i> | Iraq | KM199362 | KM199441 | KM199555 | Maharachchikumbura et al. (2014b) |
| <i>Neo. mesopotamica</i> | CBS 299.74 | <i>Eucalyptus</i> sp. | Turkey | KM199361 | KM199435 | KM199541 | Maharachchikumbura et al. (2014b) |
| <i>Neo. mianyangensis</i> | CGMCC 3.23555 ^T | <i>Paeonia suffruticosa</i> | China | OP546681 | OP672161 | OP723490 | Li et al. (2022) |
| <i>Neo. mianyangensis</i> | UESTCC 22.0006 | <i>Paeonia suffruticosa</i> | China | OP082291 | OP235979 | OP204793 | Li et al. (2022) |
| <i>Neo. moniliformis</i> | CGMCC 3.23498 = LC4495 ^T | <i>Phyllostachys</i> sp. | China | OR247886 | OR381031 | OR361431 | Razaghi et al. (2024) |
| <i>Neo. moniliformis</i> | LC15853 | <i>Phyllostachys</i> sp. | China | OR247867 | OR381032 | OR361432 | Razaghi et al. (2024) |
| <i>Neo. musae</i> | MFLUCC 15-0776 ^T | <i>Musa</i> sp. | Thailand | KX789683 | KX789686 | KX789685 | Hyde et al. (2016) |
| <i>Neo. nanningensis</i> | CGMCC 3.23475 = LC13212 ^T | <i>Ixora chinensis</i> | China | OR247872 | OR381014 | OR361414 | Razaghi et al. (2024) |
| <i>Neo. nanningensis</i> | LC13213 | <i>Ixora chinensis</i> | China | OR247871 | OR381015 | OR361415 | Razaghi et al. (2024) |
| <i>Neo. natalensis</i> | CBS 138.41 ^T | <i>Acacia mollissima</i> | South Africa | KM199377 | KM199466 | KM199552 | Maharachchikumbura et al. (2014b) |
| <i>Neo. nebuloides</i> | BRIP 66617 ^T | <i>Sporobolus elongatus</i> | Australia | MK966338 | MK977632 | MK977633 | Crous et al. (2020) |
| <i>Neo. olumideae</i> | BRIP 72273a ^T | <i>Macadamia integrifolia</i> | Australia | MZ303790 | MZ312683 | MZ344175 | Prasannath et al. (2021) |
| <i>Neo. olumideae</i> | BRIP 72283a | <i>Macadamia integrifolia</i> | Australia | MZ303791 | MZ312684 | MZ344176 | Prasannath et al. (2021) |
| <i>Neo. paeonia</i> | CBS 318.74 | <i>Anacardium occidentale</i> | Nigeria | MH554031 | MH554707 | – | Liu et al. (2019) |
| <i>Neo. paeonia-suffruticosa</i> | CGMCC 3.23554 ^T | <i>Paeonia suffruticosa</i> | China | OP082292 | OP235980 | OP204794 | Liu et al. (2019) |
| <i>Neo. paeonia-suffruticosa</i> | UESTCC 22.0033 | <i>Paeonia suffruticosa</i> | China | OP082293 | OP235981 | OP204795 | Liu et al. (2019) |
| <i>Neo. pandanicola</i> | KUMCC 17-0175 ^T | <i>Pandanus</i> sp. | China | – | MH412720 | MH388389 | Tibpromma et al. (2018) |
| <i>Neo. pernambucana</i> | URM 7148-01 ^T | <i>Vismia guianensis</i> | Brazil | KJ792466 | – | KU306739 | Silvério et al. (2016) |
| <i>Neo. pernambucana</i> | URM 7148-02 | <i>Vismia guianensis</i> | Brazil | KJ792467 | – | KU306740 | Silvério et al. (2016) |
| <i>Neo. perukae</i> | FMBCC 11.3 = FMB0127 | Fruit of Guava tree | Pakistan | MH209077 | MH460876 | MH523647 | Haq et al. (2021) |
| <i>Neo. perukae</i> | FMBCC 11.3 = FMB0128 | Fruit of Guava tree | Pakistan | MH209246 | MH460875 | MH523646 | Haq et al. (2021) |
| <i>Neo. perukae</i> | FMBCC 11.3 = FMB0130 | Branches of Guava tree | Pakistan | MH208973 | MH477871 | MH523648 | Haq et al. (2021) |
| <i>Neo. petila</i> | MFLUCC 17-1737 ^T | <i>Rhizophora mucronata</i> | Thailand | MK764275 | MK764341 | MK764319 | Norphanphoun et al. (2019) |
| <i>Neo. petila</i> | MFLUCC 17-1738 | <i>Rhizophora mucronata</i> | Thailand | MK764276 | MK764342 | MK764320 | Norphanphoun et al. (2019) |
| <i>Neo. phangngaensis</i> | MFLUCC 18-0119 ^T | <i>Pandanus</i> sp. | Thailand | MH388354 | MH412721 | MH388390 | Tibpromma et al. (2018) |
| <i>Neo. photinae</i> | MFLUCC 22-0129 ^T | <i>Photinia serrulat</i> | China | OP498008 | OP752131 | OP753368 | Sun et al. (2023) |
| <i>Neo. photinae</i> | GUCC 21-0820 | <i>Photinia serrulat</i> | China | OP806524 | OP896200 | OP828691 | Sun et al. (2023) |
| <i>Neo. phyllostachydis</i> | CGMCC 3.23491 = LC4208 ^T | <i>Phyllostachys</i> sp. | China | OR247891 | OR381023 | OR361423 | Razaghi et al. (2024) |
| <i>Neo. phyllostachydis</i> | LC4371 | <i>Rhododendron arboreum</i> | China | OR247887 | OR381029 | OR361429 | Razaghi et al. (2024) |
| <i>Neo. phyllostachydis</i> | LC4225 | <i>Castanopsis</i> sp. | China | OR247888 | OR381027 | OR361427 | Razaghi et al. (2024) |
| <i>Neo. piceana</i> | CBS 394.48 ^T | <i>Picea</i> sp. | UK | KM199368 | KM199453 | KM199527 | Maharachchikumbura et al. (2014b) |
| <i>Neo. piceana</i> | CBS 254.32 | <i>Cocos nucifera</i> | Indonesia | KM199372 | KM199452 | KM199529 | Maharachchikumbura et al. (2014b) |
| <i>Neo. poae</i> | CGMCC 3.23506 = LC7551 ^T | Poaceae sp. | China | OR247880 | OR381042 | OR361442 | Razaghi et al. (2024) |
| <i>Neo. poae</i> | LC7562 | Poaceae sp. | China | OR247879 | OR381043 | OR361443 | Razaghi et al. (2024) |

| Species | Specimen voucher / Strain | Host/Substrate | Locations | GenBank Accession Number | | | References |
|-----------------------------|-------------------------------------|-------------------------------------|-------------|--------------------------|----------|----------|-------------------------------------|
| | | | | ITS | tub2 | tef1 | |
| <i>Neo. protearum</i> | CBS 114178 ^T | <i>Leucospermum cuneiforme</i> | Zimbabwe | JN712498 | KM199463 | KM199542 | Maharachchikumbura et al. (2014b) |
| <i>Neo. protearum</i> | CBS 111506 | <i>Leucospermum cunciforme</i> | Zimbabwe | MH553959 | MH554618 | MH554377 | Liu et al. (2019) |
| <i>Neo. psidii</i> | FMBCC 11.2 = FMB0028 ^T | Branches of Guava tree | Pakistan | MF783082 | MH477870 | MH460874 | Haq et al. (2021) |
| <i>Neo. rhizophorae</i> | MFLUCC 17-1550 ^T | <i>Rhizophora mucronata</i> | Thailand | MK764277 | MK764343 | MK764321 | Norphanphoun et al. (2019) |
| <i>Neo. rhizophorae</i> | MFLUCC 17-1551 | <i>Rhizophora mucronata</i> | Thailand | MK764278 | MK764344 | MK764322 | Norphanphoun et al. (2019) |
| <i>Neo. rhododendri</i> | GUCC 21504 ^T | <i>Rhododendron simsii</i> | China | MW979577 | MW980443 | MW980444 | Yang et al. (2021) |
| <i>Neo. rhododendri</i> | GUCC 21505 | <i>Rhododendron simsii</i> | China | MW979576 | MW980445 | MW980446 | Yang et al. (2021) |
| <i>Neo. rhododendricola</i> | KUN-HKAS 123204 ^T | <i>Rhododendron</i> sp. | China | OK283069 | OK274147 | OK274148 | Chaiwan et al. (2022) |
| <i>Neo. rosae</i> | CBS 101057 ^T | <i>Rosa</i> sp. | New Zealand | KM199359 | KM199429 | KM199523 | Maharachchikumbura et al. (2014b) |
| <i>Neo. rosae</i> | CBS 124745 | <i>Paeonia suffruticosa</i> | USA | KM199360 | KM199430 | KM199524 | Maharachchikumbura et al. (2014b) |
| <i>Neo. rosicola</i> | CFCC 51992 ^T | <i>Rosa chinensis</i> | China | KY885239 | KY885245 | KY885243 | Jiang et al. (2018) |
| <i>Neo. rosicola</i> | CFCC 51993 | <i>Rosa chinensis</i> | China | KY885240 | KY885246 | KY885244 | Jiang et al. (2018) |
| <i>Neo. samarangensis</i> | MFLUCC 12-0233 ^T | <i>Syzygium samarangense</i> | Thailand | JQ968609 | JQ968610 | JQ968611 | Maharachchikumbura et al. (2014b) |
| <i>Neo. samarangensis</i> | CBS 115451 | Unidentified tree | China | KM199365 | KM199447 | KM199556 | Maharachchikumbura et al. (2014b) |
| <i>Neo. saprophytica</i> | MFLUCC 12-0282 ^T | <i>Magnolia</i> sp. | China | JX398982 | JX399017 | JX399048 | Maharachchikumbura et al. (2012) |
| <i>Neo. saprophytica</i> | CBS 115452 | <i>Litsea rotundifolia</i> | China | KM199345 | KM199433 | KM199538 | Maharachchikumbura et al. (2014b) |
| <i>Neo. scalabiensis</i> | CAA1029 = MUM 21.34 ^T | <i>Vaccinium corymbosum</i> | Portugal | MW969748 | MW934611 | MW959100 | Santos et al. (2022) |
| <i>Neo. sichuanensis</i> | CFCC 54338 ^T | <i>Castanea mollissima</i> | China | MW166231 | MW218524 | MW199750 | Jiang et al. (2021) |
| <i>Neo. sichuanensis</i> | SM15-1C | <i>Castanea mollissima</i> | China | MW166232 | MW218525 | MW199751 | Jiang et al. (2021) |
| <i>Neo. siciliana</i> | AC46 = CBS 149117 ^T | <i>Persea americana</i> | Italy | ON117813 | ON209162 | ON107273 | Fiorenza et al. (2022) |
| <i>Neo. siciliana</i> | AC48 = CBS 149118 | <i>Persea americana</i> | Italy | ON117812 | ON209163 | ON107274 | Fiorenza et al. (2022) |
| <i>Neo. smilacis</i> | CGMCC 3.23500 = LC4596 ^T | <i>Smilax lanceifolia</i> | China | OR247885 | OR381033 | OR361433 | Razaghi et al. (2024) |
| <i>Neo. smilacis</i> | LC15854 | <i>Smilax lanceifolia</i> | China | OR247866 | OR381034 | OR361434 | Razaghi et al. (2024) |
| <i>Neo. sonneratae</i> | MFLUCC 17-1745 ^T | <i>Sonneronata alba</i> | Thailand | MK764280 | MK764346 | MK764324 | Norphanphounet et al. (2019) |
| <i>Neo. sonneratae</i> | MFLUCC 17-1744 | <i>Sonneronata alba</i> | Thailand | MK764279 | MK764345 | MK764323 | Norphanphounet et al. (2019) |
| <i>Neo. steyaertii</i> | IMI 192475 ^T | <i>Eucalyptus viminalis</i> | Australia | KF582796 | KF582794 | KF582792 | Maharachchikumbura et al. (2014a,b) |
| <i>Neo. subepidermalis</i> | CFCC 55160 ^T | <i>Rosa rugosa</i> | China | OK560699 | OM117690 | OM622425 | Peng et al. (2022) |
| <i>Neo. subepidermalis</i> | CFCC 55161 | <i>Rosa chinensis</i> | China | OK560701 | OM117692 | OM622427 | Peng et al. (2022) |
| <i>Neo. suphanburiensis</i> | MFLUCC 22-0126 ^T | Unidentified plant | Thailand | OP497994 | OP752135 | OP753372 | Sun et al. (2023) |
| <i>Neo. surinamensis</i> | CBS 450.74 ^T | Soil under <i>Elaeis guineensis</i> | Suriname | KM199351 | KM199465 | KM199518 | Maharachchikumbura et al. (2014b) |
| <i>Neo. surinamensis</i> | CBS 111494 | <i>Protea eximia</i> | Zimbabwe | JX556232 | KM199462 | KM199530 | Maharachchikumbura et al. (2014b) |
| <i>Neo. terricola</i> | CGMCC 3.23553 ^T | <i>Paeonia suffruticosa</i> | China | OP082294 | OP235982 | OP204796 | Li et al. (2022) |
| <i>Neo. terricola</i> | UESTCC 22.0034 | <i>Paeonia suffruticosa</i> | China | OP082295 | OP235983 | OP204797 | Li et al. (2022) |
| <i>Neo. thailandica</i> | MFLUCC 17-1730 ^T | <i>Rhizophora mucronata</i> | Thailand | MK764281 | MK764347 | MK764325 | Norphanphoun et al. (2019) |
| <i>Neo. thailandica</i> | MFLUCC 17-1731 | <i>Rhizophora mucronata</i> | Thailand | MK764282 | MK764348 | MK764326 | Norphanphoun et al. (2019) |
| <i>Neo. umbrinospora</i> | MFLUCC 12-0285 ^T | Unidentified plant | China | JX398984 | JX399019 | JX399050 | Maharachchikumbura et al. (2012) |
| <i>Neo. vacciniicola</i> | CAA1055 = MUM 21.35 ^T | <i>Vaccinium corymbosum</i> | Portugal | MW969751 | MW934614 | MW959103 | Santos et al. (2022) |
| <i>Neo. vacciniicola</i> | CAA1054 | <i>Vaccinium corymbosum</i> | Portugal | MW969750 | MW934613 | MW959102 | Santos et al. (2022) |
| <i>Neo. vheenae</i> | BRIP 72293a ^T | <i>Macadamia integrifolia</i> | Australia | MZ303792 | MZ312685 | MZ344177 | Prasannath et al. (2021) |
| <i>Neo. vitis</i> | MFLUCC 15-1265 ^T | <i>Vitis vinifera</i> | China | KU140694 | KU140685 | KU140676 | Jayawardena et al. (2016) |
| <i>Neo. vitis</i> | MFLUCC 15-1270 | <i>Vitis vinifera</i> | China | KU140699 | KU140690 | KU140681 | Jayawardena et al. (2016) |
| <i>Neo. vitis</i> | CBS 266.80 | <i>Vitis vinifera</i> | India | KM199352 | – | KM199532 | Jayawardena et al. (2016) |

| Species | Specimen voucher / Strain | Host/Substrate | Locations | GenBank Accession Number | | | References |
|------------------------------------|---|--------------------------------|-------------|--------------------------|----------|----------|-----------------------------------|
| | | | | ITS | tub2 | tef1 | |
| <i>Neo. zakeelii</i> | BRIP 72282a ^T | <i>Macadamia integrifolia</i> | Australia | MZ303789 | MZ312682 | MZ344174 | Prasannath et al. (2021) |
| <i>Neo. zakeelii</i> | BRIP 72271a | <i>Macadamia integrifolia</i> | Australia | MZ303788 | MZ312681 | MZ344173 | Prasannath et al. (2021) |
| <i>Neo. zimbabweana</i> | CBS 111495 ^T | <i>Leucospermum cuneiforme</i> | Zimbabwe | JX556231 | KM199456 | KM199545 | Maharachchikumbura et al. (2014b) |
| <i>Neo. zingiberis</i> | HGUP10001 ^T | <i>Zingiber officinale</i> | China | MW930715 | MZ683390 | MZ683389 | He et al. (2022) |
| <i>Neo. zingiberis</i> | HGUP10005 | <i>Zingiber officinale</i> | China | ON597078 | ON595538 | ON595536 | He et al. (2022) |
| <i>Neopestalotiopsis</i> sp. | MEAN 1325 | <i>Eucalyptus globulus</i> | Portugal | MW794102 | MW802835 | MW805414 | Diogo et al. (2021) |
| <i>Neopestalotiopsis</i> sp. | MEAN 1327 | <i>Eucalyptus globulus</i> | Portugal | MW794105 | MW802838 | MW805416 | Diogo et al. (2021) |
| <i>Neopestalotiopsis</i> sp. | MEAN 1328 | <i>Eucalyptus globulus</i> | Spain | MW794115 | MW802848 | MW805417 | Diogo et al. (2021) |
| <i>Neopestalotiopsis</i> sp. | CFCC 54337 | <i>Castanea mollissima</i> | China | MW166233 | MW218526 | MW199752 | Jiang et al. (2021) |
| <i>Neopestalotiopsis</i> sp. | ZX12-1 | <i>Castanea mollissima</i> | China | MW166234 | MW218527 | MW199753 | Jiang et al. (2021) |
| <i>Neopestalotiopsis</i> sp. | CFCC 54340 | <i>Castanea mollissima</i> | China | MW166235 | MW218528 | MW199754 | Jiang et al. (2021) |
| <i>Neopestalotiopsis</i> sp. | ZX22B | <i>Castanea mollissima</i> | China | MW166236 | MW218529 | MW199755 | Jiang et al. (2021) |
| <i>Neopestalotiopsis</i> sp. | CSUFTCC61 | <i>Camellia oleifera</i> | China | OK493590 | OK562365 | OK507960 | Li et al. (2021) |
| <i>Neopestalotiopsis</i> sp. | CSUFTCC62 | <i>Camellia oleifera</i> | China | OK493591 | OK562366 | OK507961 | Li et al. (2021) |
| <i>Neopestalotiopsis</i> sp. | CSUFTCC63 | <i>Camellia oleifera</i> | China | OK493592 | OK562367 | OK507962 | Li et al. (2021) |
| <i>Neopestalotiopsis</i> sp. | CBS 233.79 | <i>Crotalaria juncea</i> | India | KM199373 | KM199464 | KM199528 | Maharachchikumbura et al. (2014b) |
| <i>Neopestalotiopsis</i> sp. | CBS 664.94 | <i>Cocos nucifera</i> | Netherlands | KM199354 | KM199449 | KM199525 | Maharachchikumbura et al. (2014b) |
| <i>Neopestalotiopsis</i> sp. | CBS 177.25 | <i>Dalbergia</i> sp. | Unknown | KM199370 | KM199445 | KM199533 | Maharachchikumbura et al. (2014b) |
| <i>Neopestalotiopsis</i> sp. | CBS 266.37 = BBA 5087 = IMI 083708 | <i>Erica</i> sp. | Germany | KM199349 | KM199459 | KM199547 | Maharachchikumbura et al. (2014b) |
| <i>Neopestalotiopsis</i> sp. | CBS 361.61 | <i>Cissus</i> sp. | Netherlands | KM199355 | KM199460 | KM199549 | Maharachchikumbura et al. (2014b) |
| <i>Neopestalotiopsis</i> sp. | CBS 323.76 | <i>Erica gracilis</i> | France | KM199350 | KM199458 | KM199550 | Maharachchikumbura et al. (2014b) |
| <i>Neopestalotiopsis</i> sp. | CBS 119.75 | <i>Achras sapota</i> | India | KM199356 | KM199439 | KM199531 | Senanayake et al. (2020) |
| <i>Neopestalotiopsis</i> sp. | CGMCC 3.23473 = LC1310 = MFLUCC 2010-0901 | Para rubber leaf litter | Thailand | OR247910 | OR381009 | OR361409 | Razaghi et al. (2024) |
| <i>Neopestalotiopsis</i> sp. | LC1321 = MFLUCC 2010-0902 | Para rubber leaf litter | Thailand | OR247909 | OR381013 | OR361413 | Razaghi et al. (2024) |
| <i>Pestalotiopsis diversiseta</i> | MFLUCC 12-0287 ^T | <i>Rhododendron</i> sp. | China | NR_120187 | JX399040 | JX399073 | Maharachchikumbura et al. (2012) |
| <i>Pestalotiopsis colombiensis</i> | CBS 118553 ^T | <i>Eucalyptus</i> sp. | Colombia | KM199307 | KM199421 | KM199488 | Maharachchikumbura et al. (2014b) |

Notes: Ex-type strains are labelled with ^T. The strains in this study are indicated in bold.

Phylogenetic analyses

NCBI-BLAST searches using sequence data generated from fungal samples were used to identify and download orthologous sequences from GenBank for multi-locus phylogenetic analyses (Tables 2, 3). Gene sequences were initially aligned with MAFFT v.7 and edited manually with MEGA 7.0.20 software and trimAL v.1.2 (<http://trimal.cgenomics.org>, accessed on 20 October 2024) (Kumar et al. 2016; Katoh et al. 2019; Lei et al. 2023). Multi-locus phylogenetic analyses of the concatenated aligned dataset were obtained by Maximum Likelihood (ML) and Bayesian Inference (BI) methods and inferred using IQtree 1.6.8 (Nguyen et al. 2015) and MrBayes 3.2.6 (Ronquist et al. 2012) with Phylosuite software v.1.2.3 (Xiang et al. 2023). For the ML analysis, Maximum-Likelihood phylogenies were inferred using IQ-TREE under best partitioned models and tree stability was evaluated with 5000 ultrafast bootstraps (Hoang et al. 2017). For the BI analysis, Bayesian Inference phylogenetic trees were constructed using MrBayes 3.2.6. PartitionFinder2 was used to select the best-fit partition model (Lanfear et al. 2017). A total of two Markov chains were simultaneously run for 2 million generations beginning with a random tree and sampling was

Table 3. Speciesnames, strain number, substrate or host, locations, and corresponding GenBank accession numbers of DNA sequences used in the molecular phylogenetic analyses of *Pseudopestalotiopsis*.

| Species | Specimen voucher /Strain | Host/Substrate | Locations | GenBank Accession Number | | | References |
|--|----------------------------------|--------------------------------|--------------------|--------------------------|-----------------|-----------------|-----------------------------------|
| | | | | ITS | tub2 | tef1 | |
| <i>Pseudopestalotiopsis ampullacea</i> | LC6618 ^T | <i>Camellia sinensis</i> | China | KX895025 | KX895358 | KX895244 | Liu et al. (2017) |
| <i>Ps. annellata</i> | NTUCC 17-030 ^T | <i>Camellia sinensis</i> | China, Taiwan | MT322087 | MT321889 | MT321988 | Tsai et al. (2018) |
| <i>Ps. avicenniae</i> | MFLUCC 17-0434 ^T | <i>Avicennia marina</i> | Thailand | MK764287 | MK764353 | MK764331 | Norphanphoun et al. (2019) |
| <i>Ps. avicenniae</i> | LF48-0709 | <i>Alpinia oxyphylla</i> | China | PP621744 | PP767825 | PP767861 | Cui et al. (2024) |
| <i>Ps. camelliae</i> | CGMCC 3.9192 | <i>Camellia sinensis</i> | China | – | KU562851 | KU562850 | Maharachchikumbura et al. (2016) |
| <i>Ps. camelliae-sinensis</i> | NTUCC 18-031 | <i>Camellia sinensis</i> | China, Taiwan | MT322047 | MT321849 | MT321948 | Tsai et al. (2018) |
| <i>Ps. camelliae-sinensis</i> | LC3490 ^T | <i>Camellia sinensis</i> | China | KX894985 | KX895316 | KX895202 | Liu et al. (2017) |
| <i>Ps. chinensis</i> | NTUCC 18-066 | <i>Camellia sinensis</i> | China, Taiwan | MT322083 | MT321885 | MT321984 | Tsai et al. (2018) |
| <i>Ps. chinensis</i> | LC3011 ^T | <i>Camellia sinensis</i> | China | KX894937 | KX895269 | KX895154 | Liu et al. (2017) |
| <i>Ps. chinensis</i> | NTUCC 18-038 | <i>Camellia sinensis</i> | China, Taiwan | MT322055 | MT321857 | MT321956 | Tsai et al. (2018) |
| <i>Ps. cocos</i> | CBS 272.29 ^T | <i>Cocos nucifera</i> | Indonesia | MH855069 | KM199467 | KM199553 | Maharachchikumbura et al. (2012) |
| <i>Ps. celtidis</i> | GUCC 21599 ^T | <i>Celtis sinensis</i> | China | OL423535 | OL439010 | OL439012 | Yang et al. (2022) |
| <i>Ps. curvatispora</i> | MFLUCC 17-1723 | <i>Rhizophora mucronata</i> | Thailand | MK764290 | MK764356 | MK764334 | Norphanphoun et al. (2019) |
| <i>Ps. curvatispora</i> | MFLUCC 17-1722 ^T | <i>Rhizophora mucronata</i> | Thailand | MK764289 | MK764355 | MK764333 | Norphanphoun et al. (2019) |
| <i>Ps. dawaina</i> | INPA 2912 | <i>Caryota mitis</i> | Brazil | MN096659 | MN151310 | MN151308 | Catarino et al. (2020) |
| <i>Ps. dawaina</i> | MM14-F0015 ^T | Unknown | Dawei, Myanmar | LC324750 | LC324751 | LC324752 | Nozawa et al. (2018) |
| <i>Ps. elaeidis</i> | CBS 413.62 ^T | <i>Elaeis guineensis</i> | Nigeria | MH554044 | MH554720 | MH554479 | Liu et al. (2019) |
| <i>Ps. elaeidis</i> | CBS 144023 | <i>Acacia crassipes</i> | Indonesia | MH554106 | MH554779 | MH554540 | Liu et al. (2019) |
| <i>Ps. gilvanii</i> | INPA 2913 ^T | <i>Paullinia cupana</i> | Brazil | MN385951 | MN385954 | MN385957 | Gualberto et al. (2021) |
| <i>Ps. hydeae</i> | NTUCC 17-003.1 | <i>Diospyros</i> sp. | China, Taiwan | MG816313 | MG816323 | MG816333 | Tsai et al. (2018) |
| <i>Ps. ignota</i> | NN 42909 ^T | <i>Camellia sinensis</i> | China | KU500020 | – | KU500016 | Maharachchikumbura et al. (2016) |
| <i>Ps. indica</i> | CBS 459.78 ^T | <i>Hibiscus rosa-sinensis</i> | India | KM199381 | KM199470 | KM199560 | Maharachchikumbura et al. (2014) |
| <i>Ps. indocalami</i> | GUCC 21600 ^T | <i>Indocalamus tessellatus</i> | China | OL423536 | OL439011 | OL439013 | Yang et al. (2022) |
| <i>Ps. ixorae</i> | NTUCC 17-001.1 ^T | <i>Lxora</i> sp. | Unknown | MG816316 | MG816326 | MG816336 | Tsai et al. (2018) |
| <i>Ps. kawthaungina</i> | MM14F0083 ^T | Unknown | Kawthaung, Myanmar | LC324753 | LC324754 | LC324755 | Nozawa et al. (2018) |
| <i>Ps. kubahensis</i> | UMAS-KUB-P20 ^T | <i>Macaranga</i> sp. | Sarawak, Malaysia | MG818971 | – | – | Lateef et al. (2015) |
| <i>Ps. myanmarina</i> | NBRC 112264 ^T | <i>Averrhoa carambola</i> | Dawei, Myanmar | LC114025 | LC114045 | LC114065 | Nozawa et al. (2017) |
| <i>Ps. myanmarina</i> | JR34-0709 | <i>Alpinia oxyphylla</i> | China | PP621737 | PP767824 | PP767860 | Cui et al. 2024 |
| <i>Ps. rhizophorae</i> | MFLUCC 17-1560 ^T | <i>Rhizophora apiculata</i> | Thailand | MK764291 | MK764357 | MK764335 | Norphanphoun et al. (2019) |
| <i>Ps. simitheae</i> | KUMCC 17-0255 | <i>Magnolia candolli</i> | China | MW244023 | MW602387 | MW273930 | Silva et al. (2021) |
| <i>Ps. simitheae</i> | MFLUCC 12-0121 ^T | <i>Pandanus odoratissimus</i> | Thailand | KJ503812 | KJ503815 | KJ503818 | Song et al. (2014) |
| <i>Ps. solicola</i> | CBS 386.97 ^T | Soil in tropical forest | Papua New Guinea | MH554039 | MH554715 | MH554474 | Liu et al. (2019) |
| <i>Ps. taiwanensis</i> | NTUCC 17-002.1 ^T | <i>Ixora</i> sp. | China, Taiwan | MG816319 | MG816329 | MG816339 | Tsai et al. (2018) |
| <i>Ps. thailandica</i> | MFLUCC 17-1724 ^T | <i>Rhizophora mucronata</i> | Thailand | MK764292 | MK764358 | MK764336 | Norphanphoun et al. (2019) |
| <i>Ps. thailandica</i> | MFLUCC 17-1725 | <i>Rhizophora mucronata</i> | Thailand | MK764293 | MK764359 | MK764337 | Norphanphoun et al. (2019) |
| <i>Ps. theae</i> | MFLUCC 12-0055 ^T | <i>Camellia sinensis</i> | Thailand | JQ683727 | JQ683711 | JQ683743 | Maharachchikumbura et al. (2012) |
| <i>Ps. theae</i> | SC011 | <i>Camellia sinensis</i> | Thailand | JQ683726 | JQ683710 | JQ683742 | Maharachchikumbura et al. (2014b) |
| <i>Ps. vietnamensis</i> | NBRC 112252 | <i>Fragaria</i> sp. | Hue, Vietnam | LC114034 | LC114054 | LC114074 | Nozawa et al. (2017) |
| <i>Ps. zhangzhouensis</i> | CGMCC 3.28547^T | <i>Ixora chinensis</i> | China | PQ681341 | PQ687600 | PQ687594 | This study |
| <i>Ps. zhangzhouensis</i> | CGMCC 3.28548 | <i>Ixora chinensis</i> | China | PQ681342 | PQ687601 | PQ687595 | This study |
| <i>Pestalotiopsis trachycarpicola</i> | OP068 ^T | <i>Trachycarpus fortunei</i> | China | JQ845947 | JQ845945 | JQ845946 | Zhang et al. (2012) |

Notes: Ex-type strains are labelled with ^T. The strains in this study are indicated in bold.

conducted every 100 generations. The first 25% of sampled trees were discarded as burn-in and the remaining trees were used to calculate posterior probabilities (PP). The phylogenetic trees were visualised using FigTree 1.4.4 (<http://tree.bio.ed.ac.uk/software/figtree>, accessed on 20 October 2024) and embellished with Adobe Illustrator CS 6.0 (Adobe Systems Inc., San Jose, CA, USA).

Results

Phylogenetic analyses of *Neopestalotiopsis* and *Pseudopestalotiopsis*

For *Neopestalotiopsis* and *Pseudopestalotiopsis*, the ITS, *tub2* and *tef1* sequence datasets were used to construct phylogenetic trees. For *Neopestalotiopsis*, *Pestalotiopsis diversiseta* (MFLUCC 12-0287) and *Pestalotiopsis colombiensis* (CBS 118553) are used as outgroups (Fig. 1). The aligned three-loci dataset had an alignment length of 1892 total characters (ITS: 1–604, *tub2*: 605–1346, *tef1*: 1347–1892). The best model for the dataset was estimated by PartitionFinder2 and Bayesian analysis selected the ITS model as GTR + I + G (Lsetnst = 6, rates = invgamma), the *tub2* model as GTR + I + G (Lsetnst = 6, rates = invgamma), the *tef1* model as GTR + I + G (Lsetnst = 6, rates = invgamma). The Bayesian analysis resulted in a mean standard deviation of split frequencies = 0.008685. For *Pseudopestalotiopsis*, *Pestalotiopsis trachycarpicola* (OP068) is used as the outgroup (Fig. 2). The dataset had an alignment length of 1791 total characters (ITS: 1–569, *tub2*: 570–1300, *tef1*: 1301–1791). The best model for the dataset was estimated by PartitionFinder2 and Bayesian analysis selected the ITS model as HKY + I + G (Lsetnst = 2, rates = invgamma), the *tub2* model as GTR + G (Lsetnst = 6, rates = gamma) and *tef1* modelled as HKY + G (Lsetnst = 2,

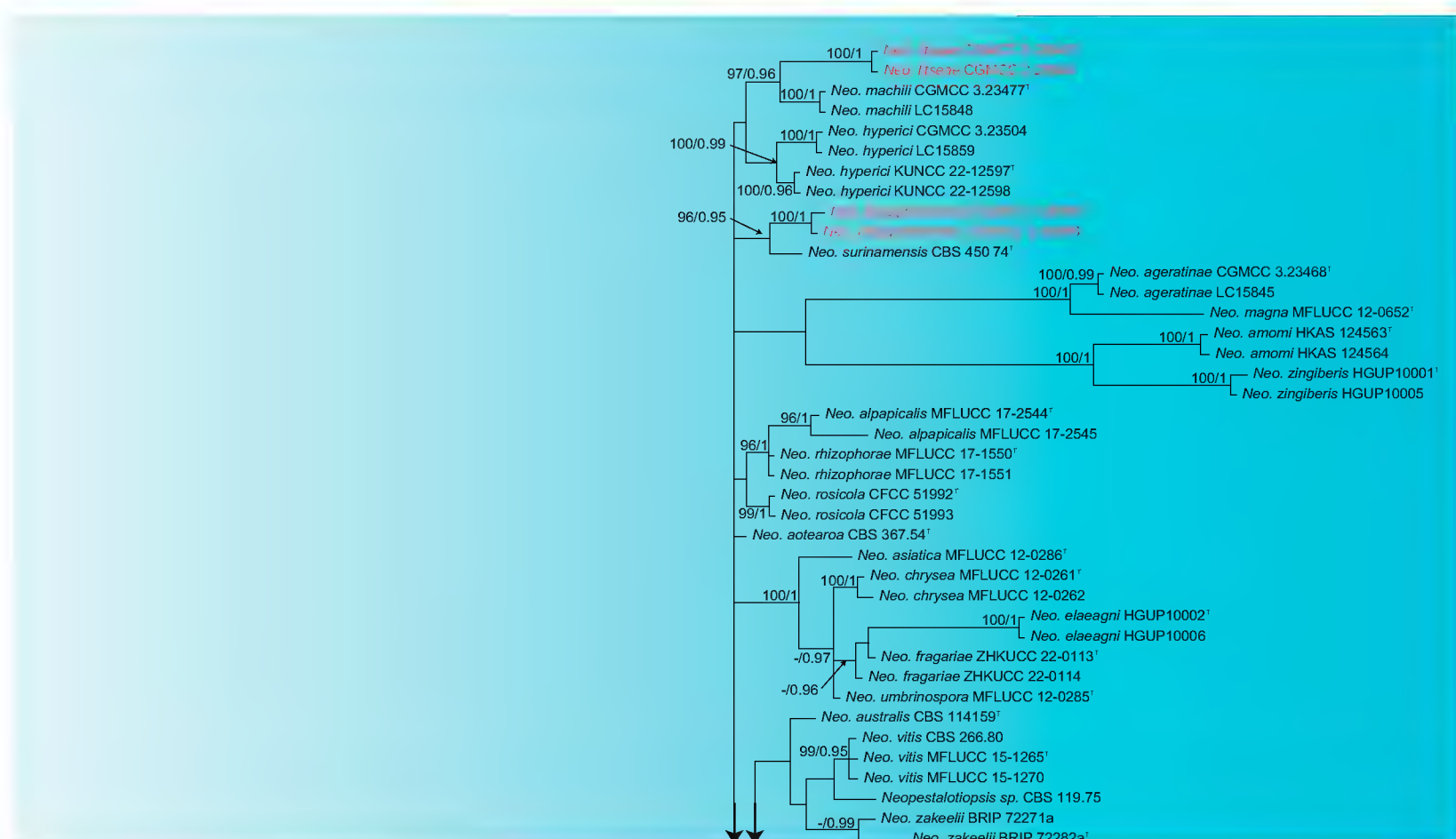


Figure 1. Phylogenetic relationship of *Neopestalotiopsis*, based on concatenated sequences of ITS, *tub2* and *tef1* sequence data. Branch support values are indicated above the nodes as ML bootstrap supports ($\geq 95\%$) and BI posterior probabilities (≥ 0.90). The tree is rooted to *Pestalotiopsis diversiseta* (MFLUCC 12-0287) and *Pestalotiopsis colombiensis* (CBS 118553). Novel species are in red and “T” indicates the type specimen. Some branches are shortened according to the indicated multipliers to fit the page size and these are indicated by the symbol (//).



Figure 1. Continued.



Figure 1. Continued.

rates = gamma). The Bayesian analysis resulted in a mean standard deviation of split frequencies = 0.003261. The topology of the ML tree was similar to the Bayesian derived tree; thus, only the Bayesian tree is shown (Figs 1, 2).

Taxonomy

Neopestalotiopsis litseae Z.A. Heng & J.Z. Qiu, sp. nov.

Mycobank No: 856857

Fig. 3

Type. CHINA • Fujian Province: Zhangzhou City, 24°30'36"N, 117°39'0"E, on diseased leaves of *Litsea verticillata*, September 2023, Z.A. Heng, holotype HMAS 353367; ex-holotype culture CGMCC 3.28543. CHINA • Fujian Province: Zhangzhou City, 24°30'36"N, 117°39'0"E, on diseased leaves of *Litsea verticillata*, September 2023, Z.A. Heng, paratype HMAS 353368; ex-paratype culture CGMCC 3.28544.

Etymology. Referring to the host genus from which it was isolated, *Litsea verticillata*.

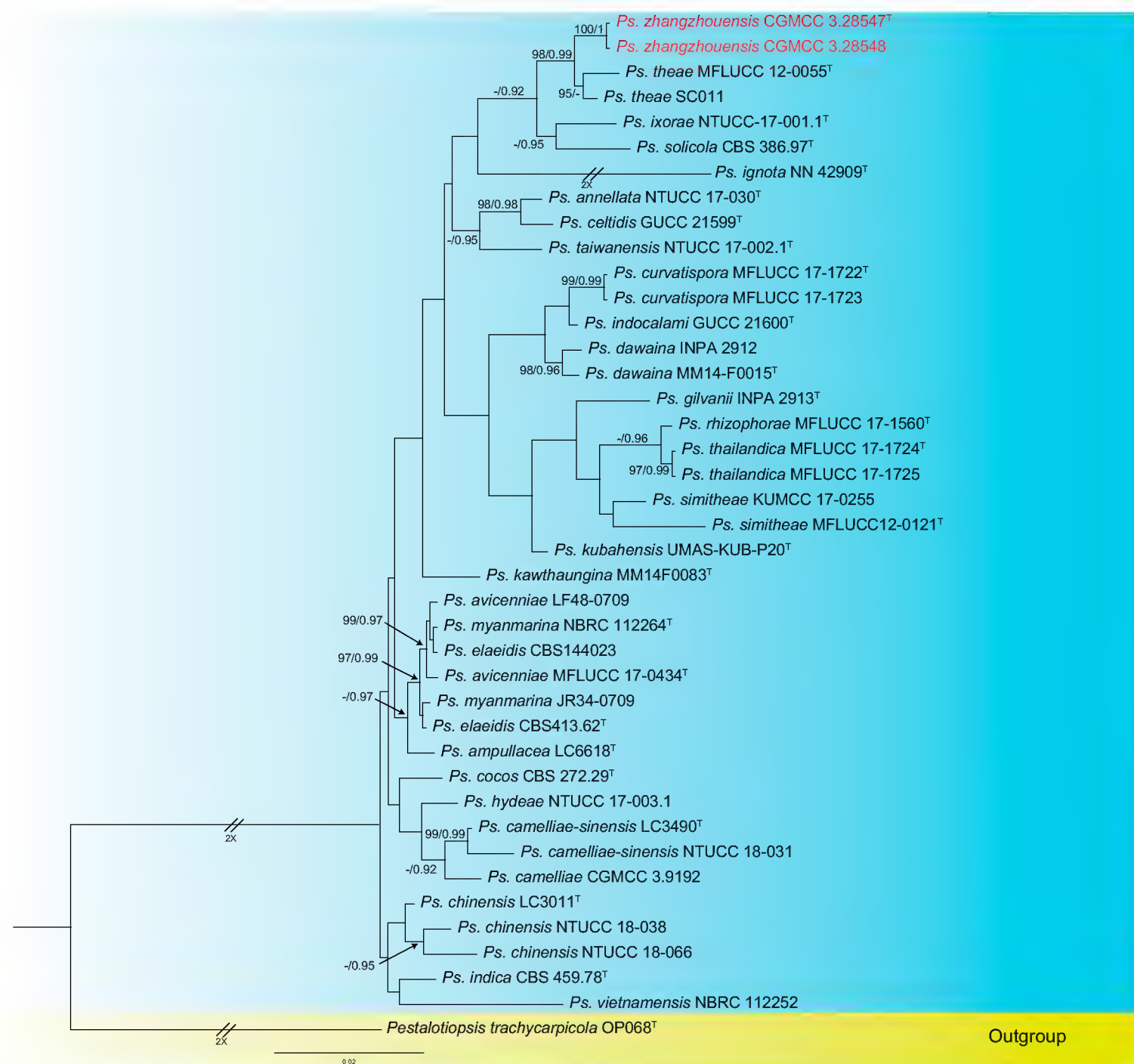


Figure 2. Phylogenetic relationship of *Pseudopestalotiopsis*, based on concatenated sequences of ITS, *tub2* and *tef1* sequence data. Branch support values are indicated above the nodes as ML bootstrap supports ($\geq 95\%$) and BI posterior probabilities (≥ 0.90). The tree is rooted to *Pestalotiopsis trachycarpicola* (OP068). Novel species are in red and "T" indicates the type specimen. Some branches are shortened according to the indicated multipliers to fit the page size and these are indicated by the symbol (//).

Diagnosis. Asexual morph on PDA: Conidiomata spherical or hemispherical submerged on PDA, black conidiophores hyaline, rugose and thin-walled, often reduced to conidiogenous cells. Conidia columnar, straight or slightly curved, $19.2\text{--}27.7 \times 4.6\text{--}6.8 \mu\text{m}$ (mean = $23.4 \times 5.8 \mu\text{m}$); 4-septate, basal cells obconic to narrowly obconic, $3.2\text{--}5.7 \mu\text{m}$ (mean = $4.0 \mu\text{m}$) long, hyaline, thin- and smooth-walled; the three intermediate cells columnar, versicoloured, septa darker than the rest of cells, $12.2\text{--}17.2 \mu\text{m}$ (mean = $15.2 \mu\text{m}$) long; the second cell from the base light brown, $3.2\text{--}5.9 \mu\text{m}$ (mean = $4.7 \mu\text{m}$) long; the third and fourth cells are dark brown; the third cell $4.3\text{--}6.4 \mu\text{m}$ (mean = $5.1 \mu\text{m}$) long; the fourth cell $4.1\text{--}6.5 \mu\text{m}$ (mean = $4.9 \mu\text{m}$) long; apical cell hyaline, conical or sub cylindrical, $2\text{--}5 \mu\text{m}$ (mean = $4 \mu\text{m}$); with 2–3 tubular apical appendages (mostly 3) arising at different parts of the apical cell, unbranched, filiform, flexuous, $9.3\text{--}42.6 \mu\text{m}$ (mean = $22 \mu\text{m}$) long; basal appendages single, tubular, unbranched, $3.2\text{--}8.8 \mu\text{m}$ (mean = $5.9 \mu\text{m}$) long. Sexual morph: Unknown.

Cultivation characteristics. Colonies on PDA were nearly circular, grew rapidly, reaching 71–74.5 mm diam. after 7 d at 25 °C; colony initially white, becoming grey-white or pale yellow after 14 days, conidiomata scarce, scattered, black, reverse side of the colony, faint yellow.



Figure 3. *Neopestalotiopsis litseae* (holotype HMAS 353367) **a** leaves of host shrub **b, c** colony on PDA after 7 days (surface and reverse) **d, e** conidiomata on PDA **f–g** conidiogenous cells and conidia **h–m** conidia. Scale bars: 10 µm (**f–m**).

Notes. Two isolates corresponding to *Neopestalotiopsis litseae* (CGMCC 3.28543 and CGMCC 3.28544) formed a distinct branch to *Neo. machili* (CGMCC 3.23477 and LC15848) with 97% ML/0.96 BYPP statistical support (Fig. 1). *Neopestalotiopsis litseae* (CGMCC 3.28543) is closely related to *Neo. machili* (CGMCC 3.23477) and comparisons of the nucleotide sequences examined showed 19 bp differences in three loci (3 bp for ITS and 16 bp for *tef1*, including four gaps). *Neo. litseae* is morphologically distinct from *Neo. machili* with narrower conidia 4.6–6.8 µm vs. 7–8.5 µm (Razaghi et al. 2024).

***Neopestalotiopsis longqishanensis* Z.A. Heng & J.Z. Qiu, sp. nov.**

MycoBank No: 856859

Fig. 4

Type. CHINA • Fujian Province: Longqi Mountain National Nature Reserve, 26°39'28" N, 117°51'16" E, on diseased leaves of an unknown shrub, September



Figure 4. *Neopestalotiopsis longqishanensis* (holotype HMAS 353369) **a** leaves of host shrub **b, c** surface and reverse sides of colony after 7 and 14 d on PDA **d, e** conidiomata on PDA **f–g** conidiogenous cells and conidia **h–m** conidia. Scale bars: 10 µm (**f–m**).

2023, Z.A. Heng, holotype HMAS 353369; ex-holotype culture CGMCC 3.28545. CHINA • Fujian Province: Longqi Mountain National Nature Reserve, 26°30'27"N, 117°17'47"E, on diseased leaves of an unknown shrub, September 2023, Z.A. Heng, paratype HMAS 353370; ex-paratype culture CGMCC 3.28546.

Etymology. Referring to the locality from which it was collected, Longqi Mountain National Nature Reserve.

Diagnosis. Asexual morph on PDA: Conidiomata globose, solitary or aggregated, semi-submerged on PDA, black, conidiophores indistinct, often reduced to conidiogenous cells. Conidiogenous cells hyaline, smooth-walled, cylindrical or jug-shaped. Conidia fusoid, ellipsoid to subcylindrical, straight to slightly curved, 20–24.7 × 4.7–6.7 µm (mean = 22.5 × 5.9 µm); 4-septate; basal cells obconic, 2.5–5.6 µm (mean = 4.1 µm) long, hyaline, thin- and smooth-walled; the three intermediate cells columnar, versicoloured, septa darker than the rest of cells, 12.9–

17.6 µm (mean = 15.2 µm) long; the second cell from the base pale brown, 3.7–6.8 µm (mean = 4.8 µm) long; third cell dark brown 3.7–6.5 µm (mean = 5.1 µm) long; fourth cell brown 4.3–6 µm (mean = 4.9 µm) long; apical cell hyaline, conical to subcylindrical, 2.3–5.4 µm (mean = 3.6 µm) long; with 2–3 tubular apical appendages (mostly 3) arising at different parts of the apical cell, unbranched, filiform, flexuous, 18.5–40.7 µm (mean = 27.3 µm) long; basal appendages single, tubular, unbranched, 3.7–10.8 µm (mean = 7.4 µm) long. Sexual morph: Unknown.

Cultivation characteristics. Colonies on PDA attaining 37–41 mm diam. after 7 d at 25 °C, with black conidiomata clusters on the surface. Edges of the colony waved, colony initially white, becoming grey-white after 14 d, reverse side of the colony, pale honey-coloured.

Notes. *Neo. longqishanensis* (CGMCC 3.28545 and CGMCC 3.28546) formed a distinct branch to *Neo. surinamensis* (CBS 450.74 and CBS 111494) with 96% ML/0.95 BYPP statistical support (Fig. 1). The ex-holotype strain *Neo. longqishanensis* (CGMCC 3.28545) is closely related to *Neo. surinamensis* (CBS 450.74) and comparisons of their nucleotides showed 9 bp nucleotide differences in three loci (3 bp for ITS, 5 bp for *tub2* and 1 bp for *tef1*). *Neo. longqishanensis* is morphologically distinct from *Neo. surinamensis* with narrower conidia 4.7–6.7 µm vs. (7–)7.5–9(–9.5) µm and shorter basal cells 2.5–5.6 µm vs. 5–7.5 µm (Maharachchikumbura et al. 2014b).

***Pseudopestalotiopsis zhangzhouensis* Z.A. Heng & J.Z. Qiu, sp. nov.**

MycoBank No: 856860

Fig. 5

Type. CHINA • Fujian Province: Zhangzhou City, 24°30'36"N, 117°39'0"E, on diseased leaves of *Ixora chinensis*, September 2023, Z.A. Heng, holotype HMAS 353371; ex-holotype culture CGMCC 3.28547. CHINA • Fujian Province: Zhangzhou City, 24°30'36"N, 117°39'0"E, on diseased leaves of *Ixora chinensis*, September 2023, Z.A. Heng, paratype HMAS 353372; ex-paratype culture CGMCC 3.28548.

Etymology. Referring to the locality from which it was collected, China, Fujian Province, Zhangzhou City.

Diagnosis. Asexual morph on PDA: conidiomata acervular, globose, dark brown or black, solitary or aggregated, semi-submerged on PDA, releasing conidia in a black, slimy, globose mass. Conidiophores indistinct and reduced to conidiogenous cells. Conidiogenous cells discrete, smooth-walled, cylindrical or finely lobed. Conidia fusiform, straight or slightly curved, 20.1–27.3 × 4.2–6.9 µm (mean = 23.3 × 5.5 µm); 4-septate, slightly constricted at the septa; basal cells obconical, 2.9–5.2 µm (mean = 4.2 µm) long, hyaline, smooth, thin-walled; the three intermediate cells columnar or cylindrical, homochromatic, pale brown to brown, 13.8–17.9 µm (mean = 15.5 µm) long, septa and periclinal walls darker than rest of the cell; second cell from the base pale brown, 4.1–6.3 µm (mean = 4.9 µm) long; third cell brown, 3.9–5.8 µm (mean = 4.8 µm) long; fourth cell pale brown to brown, 3.9–5.3 µm (mean = 4.5 µm) long; apical cell hyaline, subcylindrical, 2.2–5.1 µm (mean = 3.4 µm) long; with 2–3 tubular apical appendages (mostly 3) arising at different parts of the apical cell, unbranched, 25.1–36.7 µm (mean = 28.5 µm) long; basal appendages single, tubular, unbranched, 2–5.5 µm (mean = 3.9 µm) long. Sexual morph not observed.

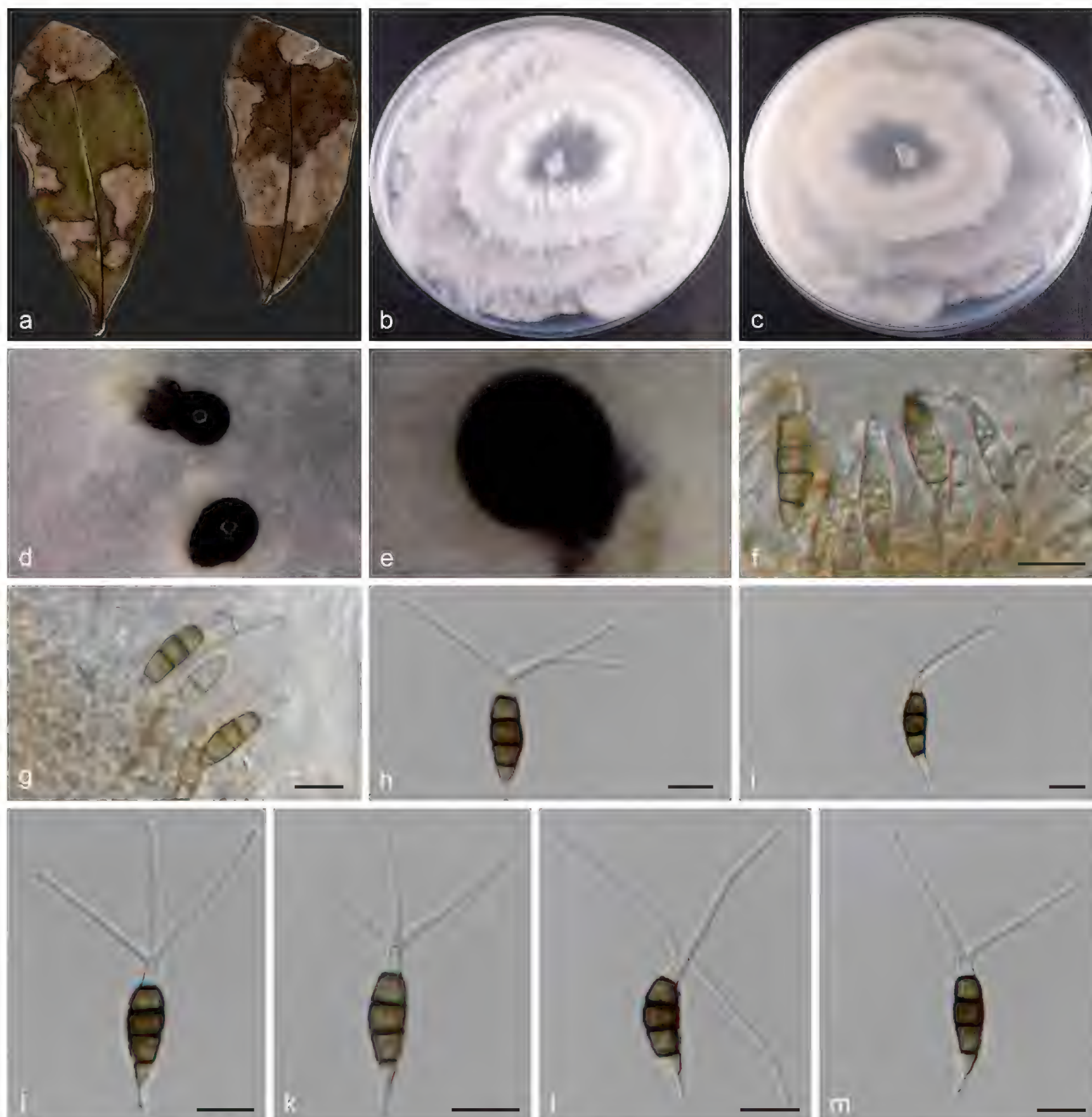


Figure 5. *Pseudopestalotiopsis zhangzhouensis* (holotype HMAS 353371) **a** leaf of host shrub **b, c** colony on PDA after 7 days (above and reverse) **d, e** conidiomata on PDA **f-g** conidiogenous cells and conidia **h-m** conidia. Scale bars: 10 µm (**f-m**).

Cultivation characteristics. Colonies on PDA grew fast, covering the Petri plate after 7 d of incubation at 25 °C. Colony edges wavy, white or yellowish, with solitary or aggregated clusters of conidiomata on the surface, reverse side of the colony, white.

Notes. Two strains *Pseudopestalotiopsis zhangzhouensis* (CGMCC 3.28547 and CGMCC 3.28548) were isolated from diseased leaf spots on *Ixora chinensis*. *Pseudopestalotiopsis zhangzhouensis* (CGMCC 3.28547 and CGMCC 3.28548) formed a distinct branching relationship to *Ps. theae* (MFLUCC-0055 and SC011) with 98% ML/0.99 BYPP statistical support (Fig. 2). The isolate is closely related to *Ps. theae* (MFLUCC-0055) and comparisons of their nucleotides showed 14 bp nucleotide differences in three loci (6 bp for *tub2* and 8 bp for *tef1*, including two gaps). *Ps. zhangzhouensis* was morphologically distinct from *Ps. theae* in its narrower conidia 4.2–6.9 µm vs. 6.6–8.3 µm and shorter basal appendages 2–5.5 µm vs. 5–9 µm (Maharachchikumbura et al. 2014b).

Discussion

The *Pestalotiopsis* was circumscribed by Steyaert in 1949, in honour of the Italian botanist Fortunato Pestalozza. Phylogenetic relationships within the genus and allied genera have been described, based on multigene loci (primarily ribosomal DNA sequences) and morphological characteristics. A sexual state of *Pestalotiopsis*, i.e. *Pestalospaeria*, has been described, with the type species *P. concentrica*, originally isolated from the grey-brown spots on *Rhododendron maximum* (Maharachchikumbura et al. 2014b). Morphological characteristics of the *Pestalotiopsis* asexual morph are primarily characterised by fusiform conidia and three pigmented median cells, each consisting of a hyaline basal cell and a hyaline apical cell with one or more simple or branched appendages, although species within this genus exhibit conidial morphological diversity and more in-depth phylogenetic analyses of different genetic loci have established that *Pestalotiopsis* comprises three distinct lineages (Jeewon et al. 2003; Maharachchikumbura et al. 2011, 2012). Based on these findings, *Pestalotiopsis* has been further divided into *Neopestalotiopsis*, *Pestalotiopsis* and *Pseudopestalotiopsis*, albeit all species within these divisions containing only four-celled conidial forms. Although mainly considered as plant pathogens, common endophytes and/or saprophytes in a variety of hosts and environments (Guba 1961; Barr 1975; Nag Raj 1993; Maharachchikumbura et al. 2014b; Li et al. 2024; Zhao et al. 2024), some *Pestalotiopsis* species can apparently cause human and/or animal diseases. These include *Pestalotiopsis* spp. isolated from bronchial samples, corneal abrasions, as well as infections of eyes, feet, fingernails, scalp and sinuses (Sutton 1999). *P. clavispora* is capable of causing fungal keratitis (Monden et al. 2013), although this latter species is also the causative agent for post-harvest stem end rot on avocado plants (Valencia et al. 2011). Some *Pestalotiopsis* species can grow aerobic and anaerobically on polyurethane as the sole carbon source and, hence, show promise in bioremediation (Russel et al. 2011). Other members of the genus have been shown to produce taxol (Gangadevi et al. 2008) and the anti-proliferative drug, chloropestolide A, has been isolated from *Pestalotiopsis fici* (Liu et al. 2009; Zhang et al. 2017).

Conidial morphology is one of the most widely used taxonomic characters for inter-specific delineation within *Pestalotiopsis* (Steyaert 1949; Guba 1961; Nag Raj 1993). However, there are considerable overlapping phenotypic characteristics that render it difficult to segregate morphologically equivocal taxa (Tejesvi et al. 2009). Conidial length and width have been emphasized as crucial characters for species identification (Steyaert 1949; Guba 1961; Mordue 1985), although reliance on these features for identification can be inaccurate. The development of molecular biology has greatly facilitated the identification of microorganisms and phylogenetic analyses of the nucleotide sequences of several genetic loci, for example, ITS, *tef1*, and *tub2*, is considered standard for fungi and can better facilitate distinctions within the current three related genera of this family, namely: *Neopestalotiopsis*, *Pestalotiopsis* and *Pseudopestalotiopsis*.

Neopestalotiopsis species have recently been identified as a group of emerging plant pathogens, causing severe diseases in economically important crops, particularly fruits including strawberry (Baggio et al. 2021), guava (Solarte et al. 2018; Shivangi et al. 2022), grape, mangosteen (Huanaluek et al. 2021), avocado (Fiorenza et al. 2022), blueberry (Santos et al. 2022), jabuticaba (Lin et al. 2022) and persimmon (Qin et al. 2023). Similarly, *Pseudopestalotiopsis* species, for example,

Ps. theae, causes several diseases on host plants such as tea (*Camellia sinensis*) and *Aloe vera* (Maharachchikumbura et al. 2014b, 2016; Ahmmed et al. 2022; Shahriar et al. 2022) and this fungus has been frequently isolated as an endophyte from hosts such as *Camellia nitidissima*, *C. sinensis*, *Holarrhena antidysenterica*, *Podocarpus macrophyllus* and *Terminalia arjuna* and as a saprophyte on *Diospyros crassiflora* seeds (Wei et al. 2007; Douanla-Meli and Langer 2009). These findings, combined with its broad host range, suggest the existence of numerous cryptic species within *Pseudopestalotiopsis*. Consequently, the actual diversity of this genus is likely significantly underestimated (Maharachchikumbura et al. 2016). Similarly, *Ps. daweiiana* was first recorded as an endophyte from healthy leaves of an unknown leaf in Myanmar (Nozawa et al. 2018). These findings suggest that these fungi may mainly associate as endophytes or saprobes, opportunistically causing disease on sick or dying leaves (or other plant structures).

Here, we add to the diversity of this group and describe three new species, namely, *Neopestalotiopsis litseae* sp. nov., *Neopestalotiopsis longqishanensis* sp. nov. and *Pseudopestalotiopsis zhangzhouensis* sp. nov. In addition to causing disease, these fungi may serve as a rich source for bioprospecting and metabolite discovery.

Acknowledgements

We thank Steven L. Stephenson (University of Arkansas, Fayetteville) for his careful language editing.

Additional information

Conflict of interest

The authors have declared that no competing interests exist.

Ethical statement

No ethical statement was reported.

Funding

The research is supported by the National Natural Science Foundation of China (No. 32270029, U1803232, 31670026), the National Forestry and Grassland Administration (No. Min[2025]TG24), the National Key R & D Program of China (No. 2017YFE0122000), a Social Service Team Support Program Project (No. 11899170165), Science and Technology Innovation Special Fund (Nos. KFB23084, CXZX2019059S, CXZX2019060G) of Fujian Agriculture and Forestry University, a Fujian Provincial Major Science and Technology Project (No. 2022NZ029017), an Investigation and evaluation of biodiversity in the Jiulong River Basin (No. 082·23259-15), Macrofungal and microbial resource investigation project in Longqishan Nature Reserve (No. SMLH2024(TP)-JL003#) and an Investigation of macrofungal diversity in Junzifeng National Nature Reserve, Fujian Province (No. Min Qianyu Sanming Recruitment 2024-23).

Author contributions

Zhi-Ang Heng, Tai-Chang Mu, Nemat O. Keyhani, Li-Xia Yang, Ming-Hai Zheng, Hua-Jun Lv, Zhen-Xing Qiu, Jun-Zhi Qiu and Xia-Yu Guan designed the research and contributed to data analysis and interpretation. Zhi-Ang Heng, Tai-Chang Mu, Zhi-Ying Zhao and

Yu-Chen Mao conducted the molecular experiments and analysed the data. Zhi-Ang Heng, Tai-Chang Mu, Hua-Jun Lv, Xia-Yu Guan and Jun-Zhi Qiu prepared the samples and drafted the manuscript. Zhi-Ang Heng, Tai-Chang Mu, Jun-Ya Shang, Jiao Yang, Hui-Li Pu, Yong-Sheng Lin, Meng-Jia Zhu, Yu-Xiao Dang, Dong-Mei Wu, Jun-Zhi Qiu, and Xia-Yu Guan discussed the results and edited the manuscript. All authors contributed to the article and approved the submitted version.

Author ORCIDs

Zhi-Ang Heng  <https://orcid.org/0009-0003-1224-9065>

Tai-Chang Mu  <https://orcid.org/0000-0003-0999-4884>

Nemat O. Keyhani  <https://orcid.org/0000-0003-2855-5158>

Li-Xia Yang  <https://orcid.org/0009-0001-5700-5836>

Ming-Hai Zheng  <https://orcid.org/0009-0005-9398-5156>

Hua-Jun Lv  <https://orcid.org/0009-0000-6596-5805>

Zhi-Ying Zhao  <https://orcid.org/0009-0009-3057-958X>

Yu-Chen Mao  <https://orcid.org/0009-0007-6368-5982>

Jun-Ya Shang  <https://orcid.org/0009-0007-0859-3604>

Jiao Yang  <https://orcid.org/0009-0004-7976-4608>

Hui-Li Pu  <https://orcid.org/0009-0009-4992-6561>

Yong-Sheng Lin  <https://orcid.org/0009-0004-2639-7576>

Meng-Jia Zhu  <https://orcid.org/0009-0009-0033-2332>

Yu-Xiao Dang  <https://orcid.org/0009-0004-9577-7468>

Dong-Mei Wu  <https://orcid.org/0009-0006-4126-0767>

Zhen-Xing Qiu  <https://orcid.org/0009-0001-4057-5103>

Jun-Zhi Qiu  <https://orcid.org/0000-0003-2293-2055>

Xia-Yu Guan  <https://orcid.org/0009-0007-3847-7663>

Data availability

All of the data that support the findings of this study are available in the main text.

References

- Ahmmed MS, Sikder MM, Sarker SR, Hossain MS, Shubhra RD, Alam N (2022) First report of *Pseudopestalotiopsis theae* causing *Aloe vera* leaf spot disease in Bangladesh. American Journal of Plant Sciences 13(2): 193–204. <https://doi.org/10.4236/ajps.2022.132012>
- Akinsanmi OA, Nisa S, Jeff-Ego OS, Shivas RG, Drenth A (2017) Dry flower disease of macadamia in Australia caused by *Neopestalotiopsis macadamiae* sp. nov. and *Pestalotiopsis macadamiae* sp. nov. Plant Disease 101(1): 45–53. <https://doi.org/10.1094/PDIS-05-16-0630-RE>
- Baggio JS, Forcelini BB, Wang NY, Ruschel RG, Mertely JC, Peres NA (2021) Outbreak of leaf spot and fruit rot in Florida strawberry caused by *Neopestalotiopsis* spp. Plant Disease 105(2): 305–315. <https://doi.org/10.1094/PDIS-06-20-1290-RE>
- Barr ME (1975) The genus *Ostreichnion*. Mycotaxon 3(1): 81–88. <https://doi.org/10.5962/p.413961>
- Bezerra JDP, Machado AR, Firmino AL, Rosado AWC Souza CAFd, Souza-Motta CMd, Freire KTLdS, Paiva LM, Magalhães OMC, Pereira OL, Crous PW, Oliveira TGLd, Abreu VPd, Fan X (2018) Mycological Diversity Description I. Acta Botanica Brasilica 32: 656–666. <https://doi.org/10.1590/0102-33062018abb0154>

- Borgohain P, Barua P, Mahanta J, Ram Saikia L (2020) Pestalotioid fungi: A rare agent of onychomycosis among agriculture workers. *Current Medical Mycology* 6(2): 23–29. <https://doi.org/10.18502/cmm.6.2.2839>
- Cai L, Hyde KD, Taylor PWJ, Weir BS, Waller JM, Abang MM, Zhang ZJ, Yang YL, Phoulivong S, Liu ZY, Prihastuti H, Shivas RG, McKenzie EHC, Johnston PR (2009) A polyphasic approach for studying *Colletotrichum*. *Fungal Diversity* 39: 183–204. <https://doi.org/10.1016/j.riam.2009.11.001>
- Catarino ADM, Hanada RE, Queiroz CAD, Sousa TF, Lima CN, Gasparotto L, Silva GFD (2020) First report of *Pseudopestalotiopsis dawaina* causing spots in *Caryota mitis* in Brazil. *Plant Disease* 104(3): 989. <https://doi.org/10.1094/PDIS-08-19-1771-PDN>
- Chaiwan N, Jeewon R, Pem D, Jayawardena RS, Nazurully N, Mapook A, Promputtha I, Hyde KD (2022) Fungal species from *Rhododendron* sp.: *Discosia rhododendricola* sp. nov, *Neopestalotiopsis rhododendricola* sp. nov and *Diaporthe nobilis* as a new host record. *Journal of Fungi* 8(9): 907. <https://doi.org/10.3390/jof8090907>
- Crous PW, Wingfield MJ, Le Roux JJ, Richardson DM, Strasberg D, Shivas RG, Alvarado P, Edwards J, Moreno G, Sharma R, Sonawane MS, Tan YP, Altes A, Barasubiye T, Barnes CW, Blanchette RA, Boertmann D, Bogo A, Carlavilla JR, Cheewangkoon R, Daniel R, de Beer ZW, de Jesus Yanez-Morales M, Duong TA, Fernandez-Vicente J, Geering AD, Guest DI, Held BW, Heykoop M, Hubka V, Ismail AM, Kajale SC, Khemmuk W, Kolarik M, Kurli R, Lebeuf R, Levesque CA, Lombard L, Magista D, Manjon JL, Marinowitz S, Mohedano JM, Novakova A, Oberlies NH, Otto EC, Paguigan ND, Pascoe IG, Perez-Butron JL, Perrone G, Rahi P, Raja HA, Rintoul T, Sanhueza RM, Scarlett K, Shouche YS, Shuttleworth LA, Taylor PW, Thorn RG, Vawdrey LL, Solano-Vidal R, Voitek A, Wong PT, Wood AR, Zamora JC, Groenewald JZ (2015) Fungal Planet description sheets: 371–399. *Persoonia* 35(1): 264–327. <https://doi.org/10.3767/003158515X690269>
- Crous PW, Wingfield MJ, Chooi YH, Gilchrist CLM, Lacey E, Pitt JI, Roets F, Swart WJ, Cano-Lira JF, Valenzuela-Lopez N, Hubka V, Shivas RG, Stchigel AM, Holdom DG, Jurjevic Z, Kachalkin AV, Lebel T, Lock C, Martin MP, Tan YP, Tomashevskaya MA, Vitelli JS, Baseia IG, Bhatt VK, Brandrud TE, De Souza JT, Dima B, Lacey HJ, Lombard L, Johnston PR, Morte A, Papp V, Rodriguez A, Rodriguez-Andrade E, Semwal KC, Tegart L, Abad ZG, Akulov A, Alvarado P, Alves A, Andrade JP, Arenas F, Asenjo C, Ballara J, Barrett MD, Berna LM, Berraf-Tebbal A, Bianchinotti MV, Bransgrove K, Burgess TI, Carmo FS, Chavez R, Cmokova A, Dearnaley JDW, Santiago ALCMA, Freitas-Neto JF, Denman S, Douglas B, Dovana F, Eichmeier A, Esteve-Raventós F, Farid A, Fedosova AG, Ferisin G, Ferreira RJ, Ferrer A, Figueiredo CN, Figueiredo YF, Reinoso-Fuentealba CG, Garrido-Benavent I, Cañete-Gibas CF, Gil-Durán C, Glushakova AM, Gonçalves MFM, González M, Gorczak M, Gorton C, Guard FE, Guarnizo AL, Guarro J, Gutiérrez M, Hamal P, Hien LT, Hocking AD, Houbraken J, Hunter GC, Inácio CA, Jourdan M, Kapitonov VI, Kelly L, Khanh TN, Kislo K, Kiss L, Kiyashko A, Kolařík M, Kruse J, Kubátová A, Kučera V, Kučerová I, Kušan I, Lee HB, Levicán G, Lewis A, Liem NV, Liimatainen K, Lim HJ, Lyons MN, Maciá-Vicente JG, Magaña-Dueñas V, Mahiques R, Malysheva EF, Marbach PAS, Marinho P, Matočec N, McTaggart AR, Mešić A, Morin L, Muñoz-Mohedano JM, Navarro-Ródenas A, Nicolli CP, Oliveira RL, Otsing E, Ovrebo CL, Pankratov TA, Paños A, Paz-Conde A, Pérez-Sierra A, Phosri C, Pintos Á, Pošta A, Prencipe S, Rubio E, Saitta A, Sales LS, Sanhueza L, Shuttleworth LA, Smith J, Smith ME, Spadaro D, Spetik M, Sochor M, Sochorová Z, Sousa JO, Suwannasai N, Tedersoo L, Thanh HM, Thao LD, Tkalčec Z, Vaghefi N, Venzhik AS, Verbeken A, Vizzini A, Voyron S, Wainhouse M, Whalley AJS, Wrzosek M, Zapata M, Zeil-Rolfe I, Groenewald JZ (2020) Fungal Planet description sheets: 1042–1111. *Persoonia* 44(1): 301–459. <https://doi.org/10.3767/persoonia.2020.44.11>

- Cui X, Hao Z, Chen M, Song S, Zhang J, Li Y, Li J, Liu Y, Luo L (2024) Identification and Pathogenicity of Pestalotioid Species on *Alpinia oxyphylla* in Hainan Province, China. *Journal of Fungi* 10(6): 371. <https://doi.org/10.3390/jof10060371>
- De Notaris G (1839) *Micromycetesitaliei* Dec II. *Mere R Acad. Sci. Torino* II. 3: 80–81.
- Diogo E, Gonçalves CI, Silva AC, Valente C, Bragança H, Phillips AJL (2021) Five new species of *Neopestalotiopsis* associated with diseased *Eucalyptus* spp. in Portugal. *Mycological Progress* 20(11): 1441–1456. <https://doi.org/10.1007/s11557-021-01741-5>
- Douanla-Meli C, Langer E (2009) *Pestalotiopsis theae* (Ascomycota, Amphisphaeriaceae) on seeds of *Diospyros crassiflora* (Ebenaceae). *Mycotaxon* 107(1): 441–448. <https://doi.org/10.5248/107.441>
- Egger KN (1995) Molecular analysis of ectomycorrhizal fungal communities. *Canadian Journal of Botany* 73(S1): 1415–1422. <https://doi.org/10.1139/b95-405>
- Fiorenza A, Gusella G, Aiello D, Polizzi G, Voglmayr H (2022) *Neopestalotiopsis siciliana* sp. nov. and *N. rosae* causing stem lesion and dieback on avocado plants in Italy. *Journal of Fungi* 8(6): 562. <https://doi.org/10.3390/jof8060562>
- Freitas EFS, Da Silva M, Barros MVP, Kasuya MCM (2019) *Neopestalotiopsis hadrolaeliae* sp. nov., a new endophytic species from the roots of the endangered orchid *Hadrolaelia jongheana* in Brazil. *Phytotaxa* 416: 211–220. <https://doi.org/10.11646/phytotaxa.416.3.2>
- Fu M, Crous PW, Bai Q, Zhang PF, Xiang J, Guo YS, Zhao FF, Yang MM, Hong N, Xu WX, Wang GP (2019) *Colletotrichum* species associated with anthracnose of *Pyrus* spp. in China. *Persoonia* 42(1): 1–35. <https://doi.org/10.3767/persoonia.2019.42.01>
- Gangadevi V, Murugan M, Muthumary J (2008) Taxol determination from *Pestalotiopsis pauciseta*, a fungal endophyte of a medicinal plant. *Chinese Journal of Biotechnology* 24(8): 1433–1438. [https://doi.org/10.1016/S1872-2075\(08\)60065-5](https://doi.org/10.1016/S1872-2075(08)60065-5)
- Gualberto GF, Catarino AD, Sousa TF, Cruz JC, Hanada RE, Caniato FF, Silva GF (2021) *Pseudopestalotiopsis gilvanii* sp. nov. and *Neopestalotiopsis formicarum* leaves spot pathogens from guarana plant: A new threat to global tropical hosts. *Phytotaxa* 489(2): 121–139. <https://doi.org/10.11646/phytotaxa.489.2.2>
- Guba EF (1961) *Monograph of Pestalotia and Monochaetia*. Harvard University Press, Cambridge.
- He YK, Yang Q, Sun YR, Zeng XY, Jayawardena RS, Hyde KD, Wang Y (2022) Additions to *Neopestalotiopsis* (Amphisphaeriales, Sporocadaceae) fungi: Two new species and one new host record from China. *Biodiversity Data Journal* 10: e90709. <https://doi.org/10.3897/BDJ.10.e90709>
- Hoang DT, Chernomor O, von Haeseler A, Minh BQ, Vinh LS (2017) Ufboot2: Improving the Ultrafast Bootstrap approximation. *Molecular Biology and Evolution* 35(2): 518–522. <https://doi.org/10.1093/molbev/msx281>
- Hu HL, Jeewon R, Zhou DQ, Zhou TX, Hyde KD (2007) Phylogenetic diversity of endophytic *Pestalotiopsis* species in *Pinus armandii* and *Ribes* spp.: Evidence from rDNA and β -tubingene phylogenies. *Fungal Diversity* 24: 1–22.
- Huanaluek N, Jayawardena RS, Maharachchikumbura SS, Harishchandra DL (2021) Additions to pestalotioid fungi in Thailand: *Neopestalotiopsis hydeana* sp. nov. and *Pestalotiopsis hydei* sp. nov. *Phytotaxa* 479(1): 23–43. <https://doi.org/10.11646/phytotaxa.479.1.2>
- Hyde KD, Hongsanan S, Jeewon R, Bhat DJ, McKenzie EHC, Jones EBG, Phookamsak R, Ariyawansa HA, Boonmee S, Zhao Q, AbdelAziz FA, AbdelWahab MA, Banmai S, Chomnunti P, Cui BK, Daranagama DA, Das K, Dayarathne MC, de Silva NI, Dissanay-

- ake AJ, Doilom M, Ekanayaka AH, Gibertoni TB, GóesNeto A, Huang SK, Jayasiri SC, Jayawardena RS, Konta S, Lee HB, Li WJ, Lin CG, Liu JK, Lu YZ, Luo ZL, Manawasinghe IS, Manimohan P, Mapook A, Niskanen T, Norphanphoun C, Papizadeh M, Perera RH, Phukhamsakda C, Richter C, de A. Santiago ALCM, DrechslerSantos ER, Senanayake IC, Tanaka K, Tennakoon TMDS, Thambugala KM, Tian Q, Tibpromma S, Thongbai B, Vizzini A, Wanasinghe DN, Wijayawardene NN, Wu HX, Yang J, Zeng XY, Zhang H, Zhang JF, Bulgakov TS, Camporesi E, Bahkali AH, Amoozegar MA, AraujoNeta LS, Ammirati JF, Baghela A, Bhatt RP, Bojantchev D, Buyck B, da Silva GA, de Lima CLF, de Oliveira RJV, de Souza CAF, Dai YC, Dima B, Duong TT, Ercole E, MafaldaFreire F, Ghosh A, Hashimoto A, Kamolhan S, Kang JC, Karunarathna SC, Kirk PM, Kytövuori I, Lantieri A, Liimatainen K, Liu ZY, Liu XZ, Lücking R, Medardi G, Mortimer PE, Nguyen TTT, Promputtha I, Raj KNA, Reck MA, Lumyong S, ShahzadehFazeli SA, Stadler M, Soudi MR, Su HY, Takahashi T, Tangthirasunun N, Uniyal P, Wang Y, Wen TC, Xu JC, Zhang ZK, Zhao YC, Zhou JL, Zhu L ((2016) Fungal diversity notes 367–490: Taxonomic and phylogenetic contributions to fungal taxa. *Fungal Diversity* 80: 1–270. <https://doi.org/10.1007/s13225-016-0373-x>
- Jayawardena RS, Liu M, Maharachchikumbura SSN, Zhang W, Xing Q, Hyde KD, Nilthong S, Li X, Yan J (2016) *Neopestalotiopsis vitis* sp. nov. causing grapevine leaf spot in China. *Phytotaxa* 258(1): 63–74. <https://doi.org/10.11646/phytotaxa.258.1.4>
- Jeewon R, Liew ECY, Hyde KD (2002) Phylogenetic relationships of *Pestalotiopsis* and allied genera inferred from ribosomal DNA sequences and morphological characters. *Molecular Phylogenetics and Evolution* 25(3): 378–392. [https://doi.org/10.1016/S1055-7903\(02\)00422-0](https://doi.org/10.1016/S1055-7903(02)00422-0)
- Jeewon R, Liew ECY, Simpson JA, Hodgkiss IJ, Hyde KD (2003) Phylogenetic significance of morphological characters in the taxonomy of *Pestalotiopsis* species. *Molecular Phylogenetics and Evolution* 27(3): 372–383. [https://doi.org/10.1016/S1055-7903\(03\)00010-1](https://doi.org/10.1016/S1055-7903(03)00010-1)
- Jiang N, Bonthond G, Fan XL, Tian CM (2018) *Neopestalotiopsis rosicola* sp. nov. causing stem canker of *Rosa chinensis* in China. *Mycotaxon* 133(2): 271–283. <https://doi.org/10.5248/133.271>
- Jiang N, Fan X, Tian C (2021) Identification and characterization of leaf-inhabiting fungi from *Castanea plantations* in China. *Journal of Fungi* 7(1): 64. <https://doi.org/10.3390/jof7010064>
- Katoh K, Rozewicki J, Yamada KD (2019) Mafft online service: Multiple sequence alignment, interactive sequence choice and visualization. *Briefings in Bioinformatics* 20(4): 1160–1166. <https://doi.org/10.1093/bib/bbx108>
- Konta S, Tibpromma S, Karunarathna SC, Samarakoon MC, Steven LS, Mapook A, Boonmee S, Senwanna C, Balasuriya A, Eungwanichayapant PD, Hyde KD (2023) Morphology and multigene phylogeny reveal ten novel taxa in Ascomycota from terrestrial palm substrates (Arecaceae) in Thailand. *Mycosphere* 14(1): 107–152. <https://doi.org/10.5943/mycosphere/14/1/2>
- Kumar S, Stecher G, Tamura K (2016) Mega7: Molecular evolutionary genetics analysis version 7.0 for bigger datasets. *Molecular Biology and Evolution* 33(7): 1870–1874. <https://doi.org/10.1093/molbev/msw054>
- Kumar V, Cheewangkoon R, Gentekaki E, Maharachchikumbura SSN, Brahmanage RS, Hyde KD (2019) *Neopestalotiopsis alpapicalis* sp. nov. a new endophyte from tropical mangrove trees in Krabi Province (Thailand). *Phytotaxa* 393(3): 251–262. <https://doi.org/10.11646/phytotaxa.393.3.2>
- Lanfear R, Frandsen PB, Wright AM, Senfeld T, Calcott B (2017) PartitionFinder 2: New methods for selecting partitioned models of evolution for molecular and morphologi-

- cal phylogenetic analyses. *Molecular Biology and Evolution* 34: 772–773. <https://doi.org/10.1093/molbev/msw260>
- Lateef AA, Sepiah M, Bolhassan MH (2015) Description of *Pseudopestalotiopsis kubahensis* sp. nov., a new species of microfungi from Kubah National Park, Sarawak, Malaysia. *Current Research in Environmental & Applied Mycology* 5(4): 376–381. <https://doi.org/10.5943/cream/5/4/8>
- Lei Y, Yang E, Dao C, Li X, Karunarathna SC, Tibpromma S, Yan K (2023) Endophytic fungi associated with *Coriaria nepalensis* in an abandoned open-pit phosphate mine in Yunnan, P.R. China. *Phytotaxa* 616(1): 27–46. <https://doi.org/10.11646/phytotaxa.616.1.2>
- Li L, Yang Q, Li H (2021) Morphology, phylogeny, and pathogenicity of pestalotioid species on *Camellia oleifera* in China. *Journal of Fungi* 7(12): 1080. <https://doi.org/10.3390/jof7121080>
- Li WL, Dissanayake AJ, Zhang T, Maharachchikumbura SSN, Liu JK (2022) Identification and pathogenicity of pestalotioid fungi associated with woody oil plants in Sichuan Province, China. *Journal of Fungi* 8(11): 1175. <https://doi.org/10.3390/jof8111175>
- Li H, Peng BY, Xie JY, Bai YQ, Li DW, Zhu LH (2024) *Pestalotiopsis jiangsuensis* sp. nov. causing needle blight on *Pinus massoniana* in China. *Journal of Fungi* 10(3): 230. <https://doi.org/10.3390/jof10030230>
- Lin YZ, Chang TD, Wen CJ, Tsai SH, Lin YH (2022) First report of leaf brown blight caused by *Neopestalotiopsis formicarum* on jaboticaba in Taiwan. *Plant Disease* 106(9): 2527. <https://doi.org/10.1094/PDIS-07-21-1414-PDN>
- Liu L, Li Y, Liu S, Zheng Z, Chen X, Zhang H, Guo L, Che Y (2009) Chloropestolide A, an antitumor metabolite with an unprecedented spiroketal skeleton from *Pestalotiopsis fici*. *Organic Letters* 11(13): 2836–2839. <https://doi.org/10.1021/ol901039m>
- Liu F, Hou LW, Raza M, Cai L (2017) *Pestalotiopsis* and allied genera from *Camellia*, with description of 11 new species from China. *Scientific Reports* 7(1): 866. <https://doi.org/10.1038/s41598-017-00972-5>
- Liu F, Bonthond G, Groenewald JZ, Cai L, Crous PW (2019) Sporocadaceae, a family of coelomycetous fungi with appendage-bearing conidia. *Studies in Mycology* 92(1): 287–415. <https://doi.org/10.1016/j.simyco.2018.11.001>
- Liu X, Tibpromma S, Zhang F, Xu J, Chethana KWT, Karunarathna SC, Mortimer PE (2021) *Neopestalotiopsis cavernicola* sp. nov. from Gem Cave in Yunnan Province, China. *Phytotaxa* 512(1): 1–27. <https://doi.org/10.11646/phytotaxa.512.1.1>
- Ma XY, Maharachchikumbura SSN, Chen BW, Hyde KD, McKenzie EHC, Chomnunti P, Kang JC (2019) Endophytic pestalotioid taxa in *Dendrobium* orchids. *Phytotaxa* 419(3): 268–286. <https://doi.org/10.11646/phytotaxa.419.3.2>
- Maharachchikumbura SSN, Guo LD, Chukeatirote E, Bahkali AH, Hyde KD (2011) *Pestalotiopsis* morphology, phylogeny, biochemistry and diversity. *Fungal Diversity* 50(1): 167–187. <https://doi.org/10.1007/s13225-011-0125-x>
- Maharachchikumbura SSN, Guo LD, Cai L, Chukeatirote E, Wu WP, Sun X, Crous PW, Bhat D, McKenzie E, Bahkali A, Hyde K (2012) A multi-locus backbone tree for *Pestalotiopsis*, with a polyphasic characterization of 14 new species. *Fungal Diversity* 56(1): 1–35. <https://doi.org/10.1007/s13225-012-0198-1>
- Maharachchikumbura SSN, Guo LD, Chukeatirote E, Hyde KD (2014a) Improving the backbone tree for the genus *Pestalotiopsis*; addition of *P. steyaertii* and *P. magna* sp. nov. *Mycological Progress* 13(3): 617–624. <https://doi.org/10.1007/s11557-013-0944-0>
- Maharachchikumbura SSN, Hyde KD, Groenewald JZ, Xu J, Crous PW (2014b) *Pestalotiopsis* revisited. *Studies in Mycology* 79(1): 121–186. <https://doi.org/10.1016/j.simyco.2014.09.005>

- Maharachchikumbura SSN, Guo LD, Liu ZY, Hyde KD (2016) *Pseudopestalotiopsis ignota* and *Ps. camelliae* spp. nov. associated with grey blight disease of tea in China. *Mycological Progress* 15(3): 1–7. <https://doi.org/10.1007/s11557-016-1162-3>
- Monden Y, Yamamoto S, Yamakawa R, Sunada A, Asari S, Makimura K, Inoue Y (2013) First case of fungal keratitis caused by *Pestalotiopsis clavispora*. *Clinical Ophthalmology* 7: 2261–2264. <https://doi.org/10.2147/OPHTH.S48732>
- Mordue JEM (1985) An unusual species of *Pestalotiopsis*: *P. steyaertii* sp. nov. *Transactions of the British Mycological Society* 85(2): 378–380. [https://doi.org/10.1016/S0007-1536\(85\)80210-2](https://doi.org/10.1016/S0007-1536(85)80210-2)
- Nag Raj TR (1993) Coelomycetous anamorphs with appendage-bearing conidia. *Mycologue publications*, Waterloo, 1–1101. [https://doi.org/10.1016/S0953-7562\(09\)80334-1](https://doi.org/10.1016/S0953-7562(09)80334-1)
- Nguyen LT, Schmidt HA, von Haeseler A, Minh BQ (2015) IQ-TREE: A fast and effective stochastic algorithm for estimating maximum-likelihood phylogenies. *Molecular Biology and Evolution* 32(1): 268–274. <https://doi.org/10.1093/molbev/msu300>
- Norphanhoun C, Jayawardena RS, Chen Y, Wen TC, Meepol W, Hyde KD (2019) Morphological and phylogenetic characterization of novel pestalotioid species associated with mangroves in Thailand. *Mycosphere* 10(1): 531–578. <https://doi.org/10.5943/mycosphere/10/1/9>
- Nozawa S, Yamaguchi K, Hoang Yen LT, Van Hop D, Phay N, Ando K, Watanabe K (2017) Identification of two new species and asexual morph from the genus *Pseudopestalotiopsis*. *Mycoscience* 58(5): 328–337. <https://doi.org/10.1016/j.myc.2017.02.008>
- Nozawa S, Ando K, Phay N, Watanabe K (2018) *Pseudopestalotiopsis dawaina* sp. nov. and *Ps. kawthaungina* sp. nov.: Two new species from Myanmar. *Mycological Progress* 17(7): 865–870. <https://doi.org/10.1007/s11557-018-1398-1>
- Peng C, Crous PW, Jiang N, Fan XL, Liang YM, Tian CM (2022) Diversity of Sporocadaceae (pestalotioid fungi) from Rosa in China. *Persoonia* 49(1): 201–260. <https://doi.org/10.3767/persoonia.2022.49.07>
- Prasannath K, Shivas RG, Galea VJ, Akinsanmi OA (2021) *Neopestalotiopsis* species associated with flower diseases of *Macadamia integrifolia* in Australia. *Journal of Fungi* 7(9): 771. <https://doi.org/10.3390/jof7090771>
- Prematunga CJ, You LQ, Gomdola D, Balasuriya A, Yang YH, Jayawardena RS, Luo M (2022) An addition to pestalotioid fungi in China: *Neopestalotiopsis fragariae* sp. nov. causing leaf spots on *Fragaria ananassa*. *Asian Journal of Mycology* 5(2): 220–238. <https://doi.org/10.5943/ajom/5/2/10>
- Qin R, Li Q, Huang S, Chen X, Mo J, Guo T, Huang H, Tang L, Yu Z (2023) Fruit rot on persimmon caused by *Neopestalotiopsis saprophytica* and *Neopestalotiopsis ellipsospora* in Guangxi, China. *Plant Disease* 107(8): 2531. <https://doi.org/10.1094/PDIS-05-22-1168-PDN>
- Razaghi P, Raza M, Han SL, Ma ZY, Cai L, Zhao P, Chen Q, Phurbu D, Liu F (2024) Sporocadaceae revisited. *Studies in Mycology* 109(1): 155–272. <https://doi.org/10.3114/sim.2024.109.03>
- Ronquist F, Teslenko M, van der Mark P, Ayres DL, Darling A, Höhna S, Larget B, Liu L, Suchard MA, Huelsenbeck JP (2012) MrBayes 3.2: Efficient Bayesian phylogenetic inference and model choice across a large model space. *Systematic Biology* 61(3): 539–542. <https://doi.org/10.1093/sysbio/sys029>
- Russell JR, Huang J, Anand P, Kucera K, Sandoval AG, Dantzler KW, Hickman D, Jee J, Kimovec FM, Koppstein D, Marks DH, Mittermiller PA, Núñez SJ, Santiago M, Townes MA, Vishnevetsky M, Williams NE, Vargas MP, Boulanger LA, Bascom-Slack C, Strobel SA

- (2011) Biodegradation of polyester polyurethane by endophytic fungi. *Applied and Environmental Microbiology* 77(17): 6076–6084. <https://doi.org/10.1128/AEM.00521-11>
- Santos GS, Mafia RG, Aguiar AM, Zarpelon TG, Damacena MB, Barros AF, Ferreira MA (2020) Stem rot of eucalyptus cuttings caused by *Neopestalotiopsis* spp. in Brazil. *Journal of Phytopathology* 168(6): 311–321. <https://doi.org/10.1111/jph.12894>
- Senanayake IC, Lian TT, Mai XM, Jeewon R, Maharachchikumbura SSN, Hyde KD, Zeng YJ, Tian SL, Xie N (2020) New geographical records of *Neopestalotiopsis* and *Pestalotiopsis* species in Guangdong Province, China. *Asian Journal of Mycology* 3(1): 510–530. <https://doi.org/10.5943/ajom/3/1/19>
- Silvério ML, Calvacanti MD, Silva GA, Vilela de Oliveira RJ, Bezerra JL (2016) A new epifoliar species of *Neopestalotiopsis* from Brazil. *Agrotrópica (Itabuna)* 28: 151–158. <https://doi.org/10.21757/0103-3816.2016v28n2p151-158>
- Santos J, Hilário S, Pinto G, Alves A (2022) Diversity and pathogenicity of pestalotioid fungi associated with blueberry plants in Portugal, with description of three novel species of *Neopestalotiopsis*. *European Journal of Plant Pathology* 162(3): 539–555. <https://doi.org/10.1007/s10658-021-02419-0>
- Shahriar SA, Nur-Shakirah AO, Mohd MH (2022) *Neopestalotiopsis clavispora* and *Pseudopestalotiopsis camelliae-sinensis* causing grey blight disease of tea (*Camellia sinensis*) in Malaysia. *European Journal of Plant Pathology* 162(3): 709–724. <https://doi.org/10.1007/s10658-021-02433-2>
- Shivangi B, Kumud J, Jarial RS, Kumar BS (2022) Cultural analysis and growth kinetics of *Pestalotiopsis psidii* (Pat.) Mordue causing scabby fruit canker in guava (*Psidium guajava* L.). *Indian Phytopathology* 75(3): 691–701. <https://doi.org/10.1007/s42360-022-00501-z>
- Silva N, Maharachchikumbura S, Thambugala K, Bhat DJ, Hyde KD (2021) Morpho-molecular taxonomic studies reveal a high number of endophytic fungi from *Magnolia candolli* and *M. garrettii* in China and Thailand. *Mycosphere* 12(1): 163–237. <https://doi.org/10.5943/mycosphere/12/1/3>
- Solarte F, Muñoz CG, Maharachchikumbura SS, Álvarez E (2018) Diversity of *Neopestalotiopsis* and *Pestalotiopsis* spp., causal agents of guava scab in Colombia. *Plant Disease* 102(1): 49–59. <https://doi.org/10.1094/PDIS-01-17-0068-RE>
- Song Y, Geng K, Zhang B, Hyde KD, Zhao W, Kang J, Wang Y (2013) Two new species of *Pestalotiopsis* from Southern China. *Phytotaxa* 126(1): 22–32. <https://doi.org/10.11646/phytotaxa.126.1.2>
- Song Y, Maharachchikumbura SS, Jiang YL, Hyde KD, Wang Y (2014) *Pestalotiopsis keteleeria* sp. nov., isolated from *Keteleeria pubescens* in China. *Warasan Khana Witthayasat Maha Witthayalai Chiang Mai* 41: 885–893.
- Steyaert RL (1949) Contribution à l'étude monographique de Pestalotia de Not. et Monochaetia Sacc. (*Truncatella* gen. nov. et *Pestalotiopsis* gen. nov.). *Bulletin du Jardin botanique de l'État à Bruxelles* 19(3): 285–354.
- Steyaert RL (1955) Pestalotia, *Pestalotiopsis* et *Truncatella*. *Bull. van den Rijksplantentuin, Brussels*, 191–199. <https://doi.org/10.2307/3667065>
- Sun YR, Jayawardena RS, Sun JE, Wang Y (2023) Pestalotioid species associated with medicinal plants in southwest China and Thailand. *Microbiology Spectrum* 11(1): e03987-22. <https://doi.org/10.1128/spectrum.03987-22>
- Sutton DA (1999) Coelomycetous fungi in human disease. A review: Clinical entities, pathogenesis, identification and therapy. *Revista Iberoamericana de Micología* 16(4): 171–179.
- Tejesvi MV, Tamhankar SA, Kini KR, Rao VS, Prakash HS (2009) Phylogenetic analysis of endophytic *Pestalotiopsis* species from ethnopharmacologically important medicinal trees. *Fungal Diversity* 38: 167–183.

- Tibpromma S, Hyde KD, McKenzie EHC, Bhat DJ, Phillips AJL, Wanasinghe DN, Samarakoon MC, Jayawardena RS, Dissanayake AJ, Tennakoon DS, Doilom M, Phookamsak R, Tang AMC, Xu J, Mortimer PE, Promputtha I, Maharachchikumbura SSN, Khan S, Karunarathna SC (2018) Fungal diversity notes 840–928: Micro-fungi associated with Pandanaceae. *Fungal Diversity* 93(1): 1–160. <https://doi.org/10.1007/s13225-018-0408-6>
- Tsai I, Maharachchikumbura SSN, Hyde KD, Ariyawansa HA (2018) Molecular phylogeny, morphology and pathogenicity of *Pseudopestalotiopsis* species of *Ixora* in Taiwan. *Mycological Progress* 17(8): 941–952. <https://doi.org/10.1007/s11557-018-1404-7>
- Ul Haq I, Ijaz S, Khan NA (2021) Genealogical concordance of phylogenetic species recognition-based delimitation of *Neopestalotiopsis* species associated with leaf spots and fruit canker disease affected guava plants. *Pakistan Journal of Agricultural Sciences* 58(4): 1301–1313. <https://doi.org/10.21162/PAKJAS/21.1045>
- Valencia AL, Torres R, Latorre BA (2011) First Report of *Pestalotiopsis clavispora* and *Pestalotiopsis* spp. causing postharvest stem end rot of Avocado in Chile. *Plant Disease* 95(4): 492. <https://doi.org/10.1094/PDIS-11-10-0844>
- Watanabe K, Nozawa S, Hsiang T, Callan B (2018) The cup fungus *Pestalopezia brunneo-pruinosa* is *Pestalotiopsis gibbosa* and belongs to Sordariomycetes. *PLoS One* 13(6): e0197025. <https://doi.org/10.1371/journal.pone.0197025>
- Wei JG, Xu T, Guo LD, Liu AR, Zhang Y, Pan XH (2007) Endophytic *Pestalotiopsis* species associated with plants of Podocarpaceae, Theaceae and Taxaceae in southern China. *Fungal Diversity* 24: 55–74. <https://www.researchgate.net/publication/228347563>
- Xiang CY, Gao F, Jakovlić I, Lei HP, Hu Y, Zhang H, Zou H, Wang GT, Zhang D (2023) Using Phylosuite for molecular phylogeny and tree-based analyses. *iMeta* 2(1): e87. <https://doi.org/10.1002/imt2.87>
- Yan JL, Nan H, Fang X, Long XE, Jiang Y, Liu J (2024) The isolation, bioactivity, and synthesis of natural products from *Litsea verticillate* with anti-HIV activities. *Frontiers in Pharmacology* 15: 1477878. <https://doi.org/10.3389/fphar.2024.1477878>
- Yang Q, Zeng XY, Yuan J, Zhang Q, He YK, Wang Y (2021) Two new species of *Neopestalotiopsis* from southern China. *Biodiversity Data Journal* 9: e70446. <https://doi.org/10.3897/BDJ.9.e70446>
- Yang Q, He YK, Yuan J, Wang Y (2022) Two new *Pseudopestalotiopsis* species isolated from *Celtis sinensis* and *Indocalamus tessellatus* plants in southern China. *Phytotaxa* 2022(543): 274–282. <https://doi.org/10.11646/phytotaxa.543.5.2>
- Zhang Y, Maharachchikumbura SSN, McKenzie EHC, Hyde KD (2012) A novel species of *Pestalotiopsis* causing leaf spots of *Trachycarpus fortunei*. *Cryptogamie. Mycologie* 33(3): 311–318. <https://doi.org/10.7872/crym.v33.iss3.2012.311>
- Zhang P, Wang X, Fan A, Zheng Y, Liu X, Wang S, Zou H, Oakley BR, Keller NP, Yin WB (2017) A cryptic pigment biosynthetic pathway uncovered by heterologous expression is essential for conidial development in *Pestalotiopsis fici*. *Molecular Microbiology* 105(3): 469–483. <https://doi.org/10.1111/mmi.13711>
- Zhang D, Yu J, Ma C, Kong LEI, He C, Li J (2021) Genomic analysis of the mycoparasite *pestalotiopsis* sp. PG52. *Polish Journal of Microbiology* 70(2): 189–199. <https://doi.org/10.33073/pjm-2021-016>
- Zhao HJ, Shu YX, Doilom M, Zeng XY, Zhang H, Dong W (2024) *Pestalotiopsis phyllostachydis* sp. nov. from Guangdong, China. *Phytotaxa* 633(1): 68–85. <https://doi.org/10.11646/phytotaxa.633.1.8>